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## SWMU 10 EXCAVATION AND PAVING ACTIVITIES REPORT

#### ARMCO KANSAS CITY FACILITY

January 26, 1998

Project 94-498-4-004-05

Prepared By:
Burns & McDonnell Waste Consultants, Inc.
Engineers-Geologists-Consultants
Kansas City, Missouri





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CERTIFIED MAIL ARTICLE NO. P 531 061 359

ARMCO INC.

SPECIALTY FLAT-ROLLED STEELS

P. O. Box 832

Butler, PA 16003-0832

412-284-2000

January 26, 1998

Mr. William Spratlin Director, Air, RCRA and Toxics Division United States Environmental Protection Agency - Region VII 726 Minnesota Avenue Kansas City, Kansas 66101

Re:

Armco Inc., Kansas City Facility HSWA Corrective Action Program Permit Number MOD 007 118 029

SWMU 10 Excavation and Paving Activities Report

Dear Mr. Spratlin:

Enclosed are three (3) copies of the SWMU 10 Excavation and Paving Activities Report dated January 26, 1998, which has been prepared for Armco Inc. by Burns & McDonnell Waste Consultants, Inc. of Kansas City, Missouri. This Report summarizes investigation and remedial activities that were conducted at SWMU 10 -- Dust Railcar Loading Area -- Bar Joist Building, in the fall of 1997 in accordance with the approved SWMU 10 Workplan.

Field investigation activities were completed at SWMU 10 to define the nature and extent of contamination characterization for the RCRA Facility Investigation (RFI). Excavation and Paving remedial activities were completed at SWMU 10 to fulfill the requirement of Part II, Section XXXI.A.2 of the Permit, which was to clean and assess the integrity of the unit to prevent the movement of wastes into the environment. Armoo has met these Permit requirements and investigation and remedial activities are complete for this SWMU. A summary of investigation results and an assessment of risks to human health and the environment will be provided in the RFI Report in accordance with Section XXX of Part II of the Permit.

As we have indicated before, the SWMU 10 area is under the ownership and control of GS Technologies Operating Company (GST Steel). Additionally, Armco believes that a good job has been done in this area given the operating and infrastructure constraints. Armco has removed 268 tons of material from this area, backfilled with compacted sub-base material and paved the entire area. As a result of this work, the potential for further exposure to cadmium and lead connected with historical deposition of these materials in SWMU 10 has been eliminated.

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or



those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. This Workplan Addendum and Certification is submitted on behalf of Armco Inc.

If you have any questions concerning the enclosed SWMU 10 Excavation and Paving Activities Report, please contact Mr. Myrl Wear at (816) 242-5855 or me at (412) 284-2267.

Very truly yours,

Daniel F. Szwed

Director - Environmental Affairs

Enclosures

CC

w/enclosures: J. H. Figg - Armco

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#### LIST OF ABBREVIATIONS AND ACRONYMS

Armco Inc.

bgs Below Ground Surface

BMWCI Burns & McDonnell Waste Consultants, Inc.

Facility Armco Kansas City Facility

GST Steel

IM Interim Measures

Permit Armco's Part B Post-Closure Permit RCRA Resource Conservation and Recovery Act

RFI RCRA Facility Investigation
SHSP Site Health and Safety Plan
SSL Soil Screening Level

SSL Soil Screening Level
SWMU Solid Waste Management Unit

TCLP Toxicity Characteristic Leachate Procedure

USEPA United States Environmental Protection Agency

\*\*\*\*

#### 1.0 INTRODUCTION

Armco Inc. has conducted interim measures activities and excavation and paving remedial activities at their Kansas City, Missouri Facility (Facility) as part of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI). These activities have been conducted to satisfy requirements presented in Part II, Section XXXI of Armco's Part B Post-Closure Permit (Permit) with the United States Environmental Protection Agency (USEPA). This Report summarizes activities completed at Solid Waste Management Unit (SWMU) 10, Dust Railcar Loading Area - Bar Joist Building in the fall of 1997, and was prepared by Burns & McDonnell Waste Consultants, Inc. (BMWCI) at Armco's request.

SWMU 10 is located on property that since 1993 has been exclusively owned and operated by GST Steel (GST). Additional background information concerning the Facility can be found in the RFI Workplan (BMWCI, 1996b) and its Addendum No. 1 (BMWCI, 1997a). Specific background information regarding SWMU 10 can be found in the Revised Interim Measures Plan (BMWCI, 1996a) and its Addendum No. 1 (BMWCI, 1996c).

Interim measures activities were completed at SWMU 10 in 1996 in accordance with the Interim Measures Plan. Information concerning the nature and extent of contamination at SWMU 10 was collected and results from this investigation were presented in the Interim Measures (IM) Investigation Report (BMWCI, 1997b). A summary of these results is presented in Appendix A. Based on the findings of the 1996 investigation at SWMU 10, the following items were proposed in the SWMU 10 Workplan (BMWCI, 1997c) to meet RFI objectives and Permit conditions:

- Further characterization of the nature and extent of soils impacted by metals (lead and cadmium).
- Paving of the cadmium and lead impacted area, with limited excavation of the area to provide clearance for the placement of clean subbase material and a 4-inch asphalt layer.

Investigation, excavation, and paving activities were conducted at SWMU 10 in the fall of 1997 in accordance with the SWMU 10 Workplan (BMWCI, 1997c) to fulfill the above items.

This report presents the findings of the additional investigation activities and summarizes the excavation and paving remedial activities completed at SWMU 10 in 1997. This Report is organized as follows:

Chapter 1.0: Introduction

Chapter 2.0: Subsurface Investigation

Chapter 3.0: Excavation and Paving Remedial Activities

Chapter 4.0: Conclusions

Chapter 5.0: References

\* \* \* \* \*

#### 2.0 SUBSURFACE INVESTIGATION

#### 2.1 SUMMARY OF INVESTIGATION ACTIVITIES COMPLETED

During the subsurface investigation at SWMU 10 in September 1997, information regarding the vertical extent of cadmium and lead concentrations was assessed through the collection of subsurface soil samples from direct-push borings. Direct-push boring locations are shown in Figure 2-1. A total of six direct-push boreholes (Borings 10B1 to 10B6) were advanced. Borings were placed on the inside and outside of the western wall of the Bar Joist Building in the approximate center of each previously sampled surface soil grid location from the 1996 interim measures investigation. Two to three samples were collected from each boring within the following depth intervals: 0-2 feet, 2-4 feet, and 4-8 feet below ground surface (bgs). Each sample was submitted to the laboratory for cadmium and lead analysis.

Borehole logs for Borings 10B1 through 10B6 are provided in Appendix B. Chain of custody records for the samples submitted for laboratory analysis are provided in Appendix C. The quality control evaluation report and the analytical laboratory reports are provided in Appendices D and E, respectively.

#### 2.2 SUMMARY OF NATURE AND EXTENT OF CONTAMINATION

Subsurface soil results for cadmium and lead are summarized in Table 2-1. Figure 2-1 presents the subsurface soil sampling locations and analytical results.

Cadmium was detected in all of the subsurface soil samples. Cadmium concentrations decreased with increased sample depth. Cadmium concentrations ranged from 1.84 to 22.3 mg/Kg in the uppermost samples collected (0-2 and 2-4 feet bgs) and from 0.27 J<sup>1</sup> to 0.63 J mg/Kg in the lowermost sample collected (4-8 feet bgs). The generic soil screening level (SSL) for cadmium is 8 mg/Kg. The application of generic SSLs was fully defined in the Phase 1 Data Package for

<sup>&</sup>lt;sup>1</sup> A "J" flag indicates analytical data was qualified as estimated by the analytical laboratory.

the RFI (BMWCI, 1997d).<sup>2</sup> Therefore, vertical extent of cadmium concentrations has been defined.

Lead was detected in all of the subsurface soil samples. Lead concentrations decreased with increased sample depth. Lead concentrations ranged from 56.7 J\*<sup>3</sup> to 1,150 J\* mg/Kg in the uppermost samples collected (0-4 feet bgs) and from 10.8 J\* to 24.8 J\* mg/Kg in the lowermost samples collected (4-8 feet bgs). The generic SSL for lead is 400 mg/Kg; therefore, vertical extent of lead concentrations has been defined.

\* \* \* \* \*

<sup>&</sup>lt;sup>2</sup> Generic SSLs, as established in Soil Screening Guidance (USEPA, 1996), are risk-based and account for migration to groundwater using a default dilution attenuation factor of 20.

<sup>&</sup>lt;sup>3</sup> A "J\*" flag indicates analytical data was qualified as estimated by BMWCI during the quality control evaluation due to matrix spike and/or matrix spike duplicate percent recoveries below quality control limits.

## Table 2-1 Subsurface Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

	Sample Point: Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Type:	10B1/DP1 9/8/97 0 4 D97-10900-9	10B1/DP2 9/8/97 4 8 D97-10900-10	10B2/DP1 9/8/97 0 2 D97-10900-6	10B2/DP2 9/8/97 2 4 D97-10900-7	10B2/DP3 9/8/97 4 8 D97-10900-8	10B3/DP1 9/8/97 0 2 D97-10900-1	10B3/DP2 9/8/97 2 4 D97-10900-2
Metals, Total	UNITS							
Cadmium, Total Lead, Total	mg/Kg mg/Kg	5.43 J* 188 J*	0.3 J 12.6 J*	5.79 J* 306 J*	3.84 J* 107 J*	0.28 J 13.7 J*	18 J* 1,080 J*	11.2 J* 226 J*

# Table 2-1 Subsurface Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

	Sample Point: Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Type:	10B3/DP3 9/8/97 5 8 D97-10900-5	10B4/DP1 9/8/97 0 2 D97-10900-12	10B4/DP1D 9/8/97 0 2 D97-10900-13 Duplicate	10B4/DP2 9/8/97 2 4 D97-10900-14	10B4/DP3 9/8/97 4 8 D97-10900-15	10B5/DP1 9/8/97 0 2 D97-10900-16	10B5/DP2 9/8/97 2 4 D97-10900-17
Metals, Total	UNITS							
Cadmium, Total Lead, Total	mg/Kg mg/Kg	0.46 J 13.6 J*	6.24 J* 484 J*	8.28 J* 1,000 J*	1.84 J* 56.1 J*	0.27 J 10.8 J*	16.8 J* 858 J*	4.7 J* 698 J*

T - Detected in associated trip blank

ND - Not Detected

## Table 2-1 Subsurface Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

	Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Depth To:	9/8/97 4 8 D97-10900-18	9/8/97 0 2 D97-10900-19	9/8/97 2 4 D97-10900-20	9/8/97 4 8 D97-10900-21	
Metals, Total	UNITS					
Cadmium, Total	ma/Ka	0.61 J	22.3 J*	11.3 J*	0.63 J	

ND - Not Detected

SWMFG19B.DGN/18-DEC-97 11:01/DBR **NOTES:** 1. NO ACTION REQUIRED IN NORTHERN PORTION OF **SWMU 10 PURSUENT TO** APPROVED WORKPLAN. 2. SOIL SAMPLES WERE COLLECTED FROM SURFACE **GRID LOCATIONS DURING** OCTOBER 1996 INVESTIGATION ACTIVITIES. 3. SOIL SAMPLES WERE **COLLECTED FROM SOIL BORING LOCATIONS DURING** SEPTEMBER 1997 INVESTIGATION ACTIVITIES. APPROXIMATE LIMITS OF NORTHERN PORTION OF SWMU 10 STORAGE Sample Cadmium 10B3 / DP1 0-2 18 J\* 1080 J\* mg/Kg 10B3 / DP2 11.2 J\* 2-4 226 J\* mg/Kg 10B3 / DP3 0.46 J 13.6 J\* 5-8 mg/Kg Units Depth (ft) Cadmium Lead Sample 5.79 J\* 306 J\* mg/Kg 10B2 / DP1 3.84 J\* 107 J\* mg/Kg 10B2 / DP2 2-4 13.7 J\* 0.28 J mg/Kg 10B2 / DP3 Sample Depth (ft) Cadmium Lead Units 1150 J 22.3 J\* mg/Kg 10B6 / DP2 11.3 J\* 265 J\* mg/Kg 10B6 / DP3 0.63 J mg/Kg 10B6 **LEGEND** ଚାର 10G3 10G6 SOIL BORING APPROXIMATE LIMITS OF 0 LOCATION SOUTHERN PORTION OF SWMU 10 LIMITS OF EXCAVATION Sample & PAVING mg/Kg ·10B5 10B5 / DP2 2-4 4.7 J\* 698 J\* mg/Kg 4-8 0.61 J 13.1 J\* 10**G**5 mg/Kg APPROXIMATE LOCATION OF BAR JOIST SURFACE SAMPLE GRID SHIPPING BUILDING RAILROAD TRACK 1996 BURNS AND McDONNELL WASTE Sample Depth (ft) | Cadmium | Units Lead 10B1 10B4 / DP1 0-2 484 J\* mg/Kg SURFACE DRAIN LOCATION 10B4 / DP1D 0-2 8.28 J\* 1000 J\* mg/Kg 10G1 10G4 10B4 / DP2 1.84 J\* 56.1 J\* mg/Kg 10B4 / DP3 0.27 J 10.8 J\* mg/Kg APPROXIMATE LIMITS OF SWMU 10 WEST WALL OF BUILDING Figure 2-1 Depth (ft) Cadmium Lead Units Burns 10B1 / DP1 5.43 J\* 188 J\* mg/Kg SWMU 10 10B1 / DP2 0.3 J 12.6 J\* mg/Kg McDonnell INVESTIGATION SAMPLING Waste 30' 60' LOCATIONS Consultants ARMCO KANSAS CITY FACILITY Inc. SCALE IN FEET GST STEEL PROPERTY

#### 3.0 EXCAVATION AND PAVING REMEDIAL ACTIVITIES

As required by Part II, Section XXXI of the Permit, Armco has conducted remedial activities at SWMU 10 to clean and assess the integrity of SWMU 10 to prevent the movement of wastes into the environment. As defined in the SWMU 10 Workplan, excavation of surface soil and paving was completed. Remedial activities were performed by personnel from Heritage Environmental Services. BMWCI personnel provided oversight and air monitoring during remedial activities.

#### 3.1 SUMMARY OF EXCAVATION ACTIVITIES

Excavation activities were performed at SWMU 10 to allow the pavement to match existing grade and facilitate surface drainage. Excavation activities were performed from October 21 to 24, 1997 in accordance with the SWMU 10 Workplan, the Site Health and Safety Plan (SHSP) (provided in the RFI Workplan) and the SHSP Amendment (provided as Appendix A in the SWMU 10 Workplan).

#### 3.1.1 Surface Soil Excavation

Excavation activities included the removal of soil from SWMU 10 from the area highlighted in Figures 2-1 and 3-1. A photograph log of the excavation activities is provided in Appendix F.

Surface soil was excavated on both the sides of the western wall of the Bar Joist Building (see photographs 1 and 2 in Appendix F). The excavation stopped at the railroad tracks on the western side of the wall. On the eastern side of the wall, soil was removed from the top of the railroad tracks to expose the railroad ties. The total dimensions of the excavation varied from approximately 17 feet wide on the north end to 26 feet wide on the south end by 150 feet long.

Figure 3-1 indicates the depths of the excavation. As specified in the SWMU 10 Workplan, a minimum of 1.0 foot of surface soil was removed from the excavation area, with the exception of areas where railroad ties prevented further excavation. During the excavation activities, a decision was made by Armco to advance the excavation area deeper. The entire area between the railroad tracks on the west and the railroad tracks on the east was excavated to between 1 to 2

feet bgs. In addition, soil was removed from the central portion of the excavation area to depths of 2 to 4.5 feet bgs (see photographs 3 through 5 in Appendix F). The approximate total volume of surface soil removed was 180 cubic yards.

Materials encountered in the excavation area consisted of asphalt and/or reddish brown silt from the surface to approximately 0.5 feet. Below the reddish brown silt, light gray gravel and dark brown gravel with slag, brick, and scrap metal extended to approximately 4 feet bgs. Brown and gray clay were observed below 4 feet. This reddish brown silty material was used as a visual indicator for advancing the excavation to depths below 1 foot bgs (see photograph 6 in Appendix F).

As specified in the Amendment to the SHSP and in an effort to reduce the potential for worker exposure during the excavation activities, all excavation activities were performed in Level C personal protective equipment, including the use of air purifying respirators. Dust suppression activities consisted of spraying a water mist over the excavation and excavated soil (see photographs 5 and 7 in Appendix F). Also in accordance with the SHSP Amendment, ambient (Sample A-1) and personal (Sample P-1) air monitoring was performed for a time weighted exposure for cadmium and lead. Table 3-1 presents the results for these samples. Air sample results for samples A-1 and P-1 were nondetect, indicating effective dust suppression.

#### 3.1.2 Excavated Soil Disposal

Excavated surface soil was placed in dump trucks for disposal at an off-site hazardous waste disposal facility. Samples of excavated material were collected and analyzed according to the specifications of the disposal facility. The SWMU 10 Toxicity Characteristic Leaching Procedure (TCLP) test results documented in the IM Report (BMWCI, 1997b) suggested that the material should not be considered a hazardous waste. However, since this area was used to manage electric arc furnace baghouse dust, the excavated material was managed as K061 waste. A total of 268 tons of material was transported off-site for disposal. Appendix G contains copies of the hazardous waste manifests.

#### 3.1.3 Confirmation Sampling Results

Confirmation soil samples were obtained to document concentrations of cadmium and lead remaining in the excavation floor beneath the area to be paved (see photograph 8 in Appendix F). Ten confirmation samples (10CF1 through 10CF10) were collected and are shown on Figure 3-1. Sample locations 10CF1 through 10CF6 correspond to direct push sample locations 10B1 through 10B6. Samples 10CF7 and 10CF9 were collected at the south end and Samples 10CF8 and 10CF10 were collected at the north end of the excavation area. Table 3-2 presents the confirmation sample analytical results.

Cadmium was detected in 9 of the 10 confirmation soil samples. Cadmium concentrations ranged from 5.16 to 35.8 mg/Kg in areas where the excavation extended from 1 to 2 feet bgs, and from nondetect to 9.82 J\* mg/Kg in the central portion of the excavation from greater than 2 to 4.5 feet bgs. Sample 10CF2/SR1, which was nondetect for cadmium, was in the area of deepest excavation.

Lead was detected in all confirmation soil samples. Lead concentrations ranged from 208 to 1,940 mg/Kg in areas where the excavation extended from 1 to 2 feet bgs, and from 131 to 647 mg/Kg in the central portion of the excavation from greater than 2 to 4.5 feet bgs. The lowest lead concentration occurred in Sample 10CF2/SR1, which was collected from the deepest area of the excavation.

#### 3.2 SUMMARY OF PAVING ACTIVITIES

Following excavation activities, the excavated area was backfilled with a subbase material consisting of 1-inch minus crushed limestone gravel, to within approximately three inches of the existing grade. Paving with asphalt was then completed (approximately three to four inches in thickness) to match the grade, and to allow for proper drainage (see photographs 9 and 10 in Appendix F).

\* \* \* \* \*

# Table 3-1 Air Monitoring Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

AND THE RESIDENCE OF THE PARTY	Sample Point:	P1/27151	A1/27149	FB
	Date Sampled:	10/21/97	10/21/97	10/21/97
Laboratory Number:		D97-12793-3	D97-12793-2	D97-12793-1
	Sample Type:	Personal	Area	Field Blank
Metals, Total	UNITS			
Cadmium, Tota	l μg/m³	1.0 U	1.0 U	1.0 U
Lead, Total	μg/m <sup>3</sup>	1.0 U	1.0 U	1.0 U

LEGEND:

B - Detected in the associated laboratory method blank

R - Qualified as unusable in the QC evaluation

NA - Not Analyzed ND - Not Detected F - Detected in the associated equipment rinsate blank

T - Detected in the associated trip blank

U\* - Qualified as undetected in the QC evaluation

J - Qualified as estimated by the laboratory

U - Qualified as undetected by the laboratory

J\* - Qualified as estimated in the QC evaluation

01-22-1998

Page 1 of 2

# Table 3-2 Confirmation Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

	Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Type:	10/24/97 2 2 2 D97-13024-1	10/24/97 2 2 2 D97-13024-2 Duplicate	10/24/97 4 4 D97-13024-3	10/24/97 2 2 2 D97-13024-4	10/24/97 2 2 2 D97-13024-5	10/24/97 2.5 2.5 2.5 D97-13024-6	10/24/97 1.5 1.5 D97-13024-9
Metals, Total	UNITS							
Cadmium, Total Lead, Total	mg/Kg mg/Kg	15.7 983	21 747	0.66 U 131	5.16 208	10.5 602	9.82 J* 647	35.8 1,940

ND - Not Detected

U - Qualified as undetected by the laboratory

# Table 3-2 Confirmation Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building Armco Kansas City Facility

Cadmium, Total Lead, Total	mg/Kg mg/Kg	6.9 389	19.2 1,420	9.67 515	10.9 541
Metals, Total	UNITS				
	Sample Point: Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Type:	10CF7/SR1 10/24/97 1.5 1.5 D97-13024-10	10CF8/SR1 10/24/97 2 2 2 D97-13024-11	10CF9/SR1 10/24/97 1.5 1.5 D97-13024-12	10CF10/SR1 10/24/97 2.5 2.5 D97-13024-13

ND - Not Detected



0.5' TO 1.0' EXCAVATION DEPTH

1.0' TO 2.0' EXCAVATION DEPTH

2.0' TO 4.5' EXCAVATION DEPTH

CONCRETE FOOTING

CONFIRMATION SOIL SAMPLE

RAILROAD TRACK

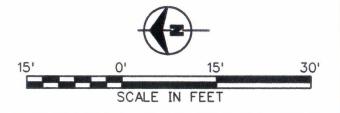




Figure 3-1
SWMU 10
REMEDIAL EXCAVATION LIMITS
AND CONFIRMATION SAMPLE
LOCATION MAP

#### 4.0 CONCLUSIONS

The overall objectives of the SWMU 10 activities, as specified in the Permit, were to:

- Collect data concerning the nature and extent of contamination at SWMU 10
- Clean and assess the integrity of SWMU 10 to prevent the movement of wastes into the environment.

As described in Section 2, September 1997 investigation activities defined the nature and extent of cadmium and lead concentrations. Remedial activities (excavation and paving) conducted during October 1997 satisfied the Permit requirements of cleaning and assessing the integrity of SWMU 10. Completion of the remedial activities has precluded the potential for future contaminant movement. In addition, the activities have removed the potential for direct contact and worker exposure to cadmium and lead associated with historical deposition of electric arc furnace baghouse dust at SWMU 10.

\* \* \* \* \*

#### 5.0 REFERENCES

- Burns & McDonnell Waste Consultants, Inc. (BMWCI). 1996a. Revised Interim Measures Plan. Prepared for Armco Kansas City Facility. Kansas City, Missouri: Burns & McDonnell Waste Consultants, Inc., December 1994, revised February 1996.
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\* \* \* \* \*

APPENDIX A

October 1996 SWMU 10 Interim Measures Investigation Results

# Appendix A - Table 1 Surface Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building (GST) RFI Interim Measures **Armco Kansas City Facility**

Metals, Total Cadmium, Total Lead, Total	UNITS mg/Kg mg/Kg	13 F 473	15.3 F 538	42.5 F 1,450	38.5 F 1,200	38 F 1,290	37.4 F 4,890	38.2 F 1,290
	Sample Point: Date Sampled: Sample Depth From: Sample Depth To: Laboratory Number: Sample Type:	10G1/SR1 10/29/96 0 .5 D96-12266-1	10G1/SR2 10/29/96 .5 1 D96-12266-3	10G2/SR1 10/29/96 0 .5 D96-12266-10	10G2/SR2 10/29/96 .5 1 D96-12266-11	10G2/SR2D 10/29/96 .5 1 D96-12266-12	10G3/SR1 10/29/96 0 .5 D96-12266-13	10G3/SR2 10/29/96 .5 1 D96-12266-16

R - Qualified as unusable in the QC evaluation

# Appendix A - Table 1 Surface Soil Sample Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building (GST) RFI Interim Measures **Armco Kansas City Facility**

	Sample Point: Date Sampled: mple Depth From: Sample Depth To: boratory Number: Sample Type:	10G4/SR1 10/29/96 0 .5 D96-12266-4	10G4/SR2 10/29/96 .5 1 D96-12266-7	10G5/SR1 10/29/96 0 .5 D96-12266-5	10G5/SR2 10/29/96 .5 1 D96-12266-8	10G6/SR1 10/29/96 0 .5 D96-12266-6	10G6/SR2 10/29/96 .5 1 D96-12266-9
Metals, Total	UNITS			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
Cadmium, Total Lead, Total	mg/Kg mg/Kg	24 F 1,150	21.1 F 930	49.3 F 2,030	24.4 F 1,300	141 F 5,860	63.5 F 2,870

R - Qualified as unusable in the QC evaluation

# Appendix A - Table 2 Surface Soil Sample TCLP Analytical Results SWMU 10 - Dust Railcar Loading Area - Bar Joist Building (GST) RFI Interim Measures Armco Kansas City Facility

	Sample Point: Date Sampled:	10G3/SR1 10/29/96	10G6/SR1 10/29/96
Sample Depth Fr Sample Depth Laboratory Num		u .5 D96-13664-2	.5 D96-13664-1
TCLP Metals	UNITS		
Cadmium Lead	mg/L mg/L	0.239 0.845	0.783 2.2

LEGEND: B - Detected in the associated laboratory method blank J\* - Qualified as estimated in the QC evaluation

U - Qualified as undetected by the laboratory

NA - Not Analyzed

F - Detected in the associated equipment rinsate blank

R - Qualified as unusable in the QC evaluation

U\* - Qualified as undetected in the QC evaluation

ND - Not Detected

J - Qualified as estimated by the laboratory

T - Detected in associated trip blank

D - Diluted sample

APPENDIX B

**Borehole Logs** 

	CORFI			Project Number 94-498-4-004-05							Boring Number 10B1					
round Elev		E5024					Page 1 of 1									
ir Monitorir	ng Equipment	704.1				Total Footage 8.0										
OVM 580B  Drilling Type Hole Size Overburden Foo							Bedrock	Footage	<u> </u>	No. C	of Sample	No. Of Core Boxes				
	t Push	2"		8			(				2		0			
rilling Comp	pany Hydrol	ogic				D	riller (s) Mi	ke Ocs	ody, J	orge .	Jacobs					
rilling Rig	Simco 200	Terra Pin				T	ype of Ma	icro Co	re							
ate 09/0	08/97	1	o 09/08	8/97			ield Observ	er (s) K	.SIMMC	NS, F	Ryan Hr	abe				
Depth					Class	Blov	Recov.	Run/	Sample		PID (pp	om)	Domarka /			
(feet)		Descriptio	n		Class	Cour	unt hecov.	Time	Desig.	BZ	ВН	S	Remarks/ Water Levels			
3-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	SILT, with black (10' dense, no	clay, some s YR2/I), moist nplastic y dark gray f, high plastic	(10YR6/ t, loose, slag grav to wet, (5Y3/1), sity	3) to	ML FILL		1.3/ 4.0 4.0/ 4.0	14:08	DP1	0	0	0	Not enough recovery to sample 0-2 and 2-4 FT intervals, combined both into a 0-4 FT sample DP1  Hard at 3.2 FT, then soft probing			
7- 	plasticity	th 8.0 FT.	high							0	0	0	Stopped at 14:10			

Borelo Weste

S Consultants,

M Dominical Inc.

Project Name         Project Number         Boring Number           ARMCORFI         94-498-4-004-05         10B2													22			
ARI Ground E	<del>~</del>		94-4	94-498-4-004-05							Page					
751	1.71 MSL	486.0	38			1 of 1										
Air Monite	oring Equipment 580B_							Total F	Footage	8.0						
Dri	lling Type	Hole Size	е	Overburde	n Footag	е	Bedrock	Footage	•	No. C	of Sample	es	No. Of Core Boxes			
Dir	ect Push	2''			3		C	)			3		. 0			
Drilling Co	ompany Hydrol	ogic					<b>Oriller (s)</b> Mi	ke Ocs	ody, J	orge .	Jacobs					
Drilling Ri	ig Simco 200	Terra Pin				1	Type of Ma Sampler	cro Co	re							
Date 09	9/08/97	Т	<b>o</b> 09/0	8/97		F	ield Observ	er (s) K	.SIMM	DNS, F	Ryan Hr	abe				
Depth	_				Class	Blo	W Book	Run/	Sample	2	PID (p	pm)	Domestico (			
(feet)		Description	n	n		Cou	nt Recov.	Time	Desig.		ВН	S	Remarks/ Water Levels			
1-	SILT, trac and grave damp, loo SILT, with and grave	ML FILL		2.7/	13:40	DP1				Start at 13:30						
3-1	loose, nor	plastic					4.0	13:45	DP2		0	0	Hit hard object at 3 FT			
5	CLAY, dar stiff, high	k gray (5Y4) plasticity	/1), mois	t,	CH	-	4.0/	13:50	DP3	0	0	0	on sample core, sampled center of soil core from 4-8 FT.			
8 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total Dep	th 8.0 FT.									0	0	Stopped at 13:50			
11-11-11-11-11-11-11-11-11-11-11-11-11-	Breathing Zone	BH=Bore Hol	e 5=	Sample									Port to:			

Burno Waste

Consultants,
McDosmoli Inc.

Project Name Project Number Boring Number 10B3 ARMCORFI 94-498-4-004-05 Ground Elevation Location Page 751.73 MSL N1070310.38 E502490.29 1 of 1 Air Monitoring Equipment Total Footage 8.0 **OVM 580B** Overburden Footage **Drilling Type** Hole Size Bedrock Footage No. Of Samples No. Of Core Boxes 2" Direct Push 8 0 3 0 Drilling Company Hydrologic Driller (s) Mike Ocsody, Jorge Jacobs Type of Macro Core Drilling Rig Simco 200 Terra Pin Date 09/08/97 To 09/08/97 Field Observer (s) K.SIMMONS, Ryan Hrabe PID (ppm) Depth Blow Run/ Sample Class Recov. Remarks/ (feet) Count Time Desig. Description ΒZ ВН Water Levels S SILT, with slag sand and gravel, very dark grayish brown (10YR3/2), Start at 12:55 FILL moist, loose, nonplastic, trace low plasticity clay 13:05 DP1 SILT, with slag sand and gravel, brown (10YR5/3), moist, loose, 2.5/ 2 4.0 nonplastic, trace low plasticity clay, 0.1 FT black seam at 1.9 FT DP2 3. 13:10 MS/ Took matrix spike and matrix spike MSD duplicate from 2-4 FT Note: Did not 0 0 0 SILT, trace slag sand and gravel, sample 4-5 FT very dark gray (10YR3/1), wet, interval NS loose, low to medium plasticity СН 5. CLAY, trace silt, dark gray (5Y4/1), moist to wet, stiff, high plasticity 1.5 TSF 4.0/ 6 13:25 4.0 DP3 7 0 0 0 8 Total Depth 8.0 FT. Stopped at 13:15 9 10-12-13 BZ=Breathing Zone

BH=Bore Hole

S=Sample

Project I AR	Name MCORFI		Project Number 94-498-4-004-05						Boring Number 10B4						
	Elevation 1.72 MSL	n 070241.32	70241.32 E502493.53							<b>Page</b> 1 of 1					
Air Monit	oring Equipment 580B									Total F	Footage	8.0			
	illing Type	Hole S	ize	Overburde	n Footag	е	Bedrock	Footage	•	No. 0	of Sample:	<del></del>	No. Of Core Boxes		
Dir	ect Push	2''		8	3		(	)			3		0		
Drilling C	ompany Hydro	logic		·		D	<b>iller (s)</b> Mi	ke Ocs	ody, J	orge .	Jacobs				
Drilling R	ig Simco 200	Terra Pin				T	ype of Ma	cro Co	re		·····				
Date 09	9/08/97		<b>To</b> 09/0	8/97		F	ield Observ	er (s) K	.SIMMC	NS, F	Ryan Hra	abe			
Depth (feet)		Descripti	ion		Class	Blow Cour		Run/ Time	Sample Desig.	ղ <del> </del>			Remarks/ Water Levels		
	SILL SOM	ie clay, trac		and	ML					BZ	ВН	S	Start at 14:55		
1-	and grave	el, dark gray ?), moist, loos	ish brow	n	FILL			14:50	DP1 DP1D				-		
2-		ND, with silt,			SM		2.6/						DPID is a duplicate of DP1		
-	gravel, ve	ery dark gra ), moist, loos	yish brov	vn	FILL		4.0								
3-	(10111372	<i>)</i> , moist, 1003	se, nonpa	35110				14:55	DP2				-		
=								ļ							
4-	CLAY, ver moist, stif	ry dark gray ff, high plast	(10YR3)	/1),	СН					0	0	0	_		
5-													<u>-</u>		
6-	CLAY, day (10YR4/1) plasticity	rk grayish bi ), moist, stiff	rown , high				3.0/ 4.0	15:05	DP3				-		
7-													_		
8-	Total Dep	oth 8.0 FT.								0	0	0	Stopped at 14:55		
													Stopped at 14:55		
9-													-		
1															
10													-		
11-													-		
<u>,                                    </u>															
12-															
13-															
14															

BZ=Breathing Zone

BH=Bore Hole

S=Sample

Project Name Project Number Boring Number																	
Project AF	Name RMCORFI		Project Number 94-498-4-004-05							Boring Number 10B5							
	Elevation 1.74 MSL		Location N10		273.36 E502495.08							Page 1 of 1					
Air Moni ○VN	toring Equipment					Total Footage 8.0											
	rilling Type	Hole Size	e	Overburder	Footag	je	Bedrock		No. Of	Sample	-	No. Of Core Boxes					
Di	rect Push	2''		8			(	)			3		0				
Drilling (	Company Hydro	logic					<b>)riller (s)</b> Mi	ke Ocs	ody, J	orge J	acobs						
Drilling f	Rig Simco 200	Terra Pin				1	Type of Macro Core										
Date 0	9/08/97	т	09/0	8/97	<del>-</del>	F	ield Observ	er(s)K	.SIMMO	ONS, R	yan Hi	abe					
Depth (feet)		Descriptio	n		Class		Recov.	Run/ Time	Sample Desig	-1	PID (p		Remarks/ Water Levels				
1 -	and grave (10YR6/2 (10YR3/3 SILT, som	le clay, some el, light brown ) to dark brown ), damp, loose le clay, some	ish gray wn e, nonpla slag gra	astic ————————————————————————————————————	ML FILL			15:15	DP1		<u> </u>		Start at 15:10				
2-	medium pl	in (10YR3/3), asticity	moist, s	STITT,			2.1 4.0						Slag in sampler — preventing better sample recovery				
3-								15:20	DP2								
4-1 5-1	CLAY, dar to wet, st	rk gray (10YF iff, high plast	R4/1), mo	vist	СН					0	0	0	Gravel and silt sloughed into borehole from surface and obstructed part of sampler				
6-1							1.7/	15:25	DP3								
7-						To be defined as a second as a				0	0	0	Sampled center of sample core				
8 9	Total Dep	oth 8.0 FT.									,	Ü	Stopped at 15:20				
10-																	
11-																	
12-																	
13-																	

BZ=Breathing Zone

BH=Bore Hole

S=Sample

Project	Name MCORFI				Project Number 94-498-4-004-05							Boring Number 10B6					
Ground E	Elevation 1.51 MSL		Location	 n	70312.18 E502497.03							Page 1 of 1					
Air Monit	oring Equipment		1	0,00,2,00		<u> </u>			Total Footage 8.0								
	illing Type	Hole Siz	:e	Overburder	n Footag	e	Bedrock		No. 0	f Samples	No. Of Core Boxes						
Dir	ect Push	2''		8			C	)			3		0				
Drilling C	company Hydro	logic				Di	riller (s) Mi	ke Ocs	ody, J	orge (	Jacobs						
Drilling R	ig Simco 200	Terra Pin				T' S	Type of Macro Core										
Date 0	9/08/97		<b>To</b> 09/0	8/97		Fi	Field Observer (s) K.SIMMONS, Ryan Hrabe										
Depth					Class	Blow			Sample		PID (pp	m)	Remarks/				
(feet)		Descriptio	on .		Class	Coun	it Recov.	Time	Desig.	BZ	ВН	s	Water Levels				
	SILT, with	h slag gravel, yish brown (10	trace o	ay,	ML FILL								Start at 15:25				
, 1	damp, loo	se, nonplasti	C	,				15:30	DD1				=				
']	SILT, with	 h slag sand a	nd grav	 el,				15:30	DP1				-				
٦	trace cla loose, noi	y, brown (10)	YR4/3),	moist,			2.5/						-				
2-		· 					4.0										
3 -	SILT, ver moist to v	y dark gray wet, soft, low	(10YR3/ plastici	1), ty				15.05	550				]				
3-								15:35	DP2								
													-				
4-	CLAY, SOI	me silt, dark g	grayish l	orown	СН					0	0	0	some gravel and — silt is sloughing —				
_	plasticity	2), moist to we	et, stiff,	nign									down into bore hole and sampler				
5-							:						_				
]							25/										
6-							2.5/ 4.0	15:40	DP3				DP3 sample — collected from —				
]							,						center of soil core				
7-																	
]																	
8-	Total Dep	oth 8.0 FT.		<u>.</u>						0	0	0					
]													Stopped at 15:35				
9-																	
1													=				
10-																	
11-]										1							
1																	
12-													-				
													]				
13-													-				
=																	
14 <sup>-</sup>	Breathing Zone	BH=Bore Ho	le S=	Sample									B.u.n. Waste				

APPENDIX C

**Chain-of-Custody Records** 

				Red	quest for (	Chemical A	nalysis a	and C	Chair	n of C	Custo	dy F	Recor	ď										
	onnell Waste C	Consultants,	Inc.	Laboratory		エフワ						_	Doc	umei	nt Co	ontro	i No	·.:						
9400 Ward P Kansas City	arkway Missouri 64114			Address	ľo	89 E.C	16	2/0-	<b>)</b> .				Lab	. Refe	oron	oo Ni								
	333-8787 Fax		3463	City/State/Z		chard so				٢/		_		sode		COIN	J. UI		<b>)</b> [	211	21	NI	11	
Attention:	Sharon S	helto-		Telephone	(97	2) 238-	5591	•								7	7		7	111	<del>41</del> ,	<del>  \ /</del>	1	_
Project Numb		8-4-004	-03	Project		LMCORF!			Saı	mple 1	Гуре				%	\o\	<b>y</b> /	/,	/ ,	/ /				
Site, Group, o	r SWMU Name:	ริเมลเ	/8						Matrix	K	<u>g</u>		कु कु	4	.u /	$\mathcal{X}$				//				
Sample Nu	ımber	Sample	Event		le Depth feet)	Sar	mple ected	Ē	10		Composite	0	Number of Containers		ر مراجع	"	/ /	/ /	/ /	//				
Sample Point	Sample Designator	Round	Year		To	Date	Time	Liquid	Solid	Gas	ပ္ပ	Grab	₹8	/ (	\$\\\ \parts\righta							Remark	(S	
10 B3	DPI			0	2	9/8/97	1305		人		メ	火	1	×						10	590	00	(	
1033	DPZ			ス	У	9/8/17	1310		V		t	2	`	X									<u>2</u>	
1033	DP2ms			ュ	4	9/8/97	13/0		V		1	*	1	~									<u>3</u>	
1083	DPZASD			2	4	7/8/57	1310		×		X	×	1	×									4	,
10 3 3	DP3			5	8	9/8/97	1325		X		*	)At	1	×										,
10 B2	DPI			0	2	9/8/87	1340		*		+	*	1	X									6	
1082	DPZ		<u></u>	2	۲ .	918197	1345		X		1		11	1										
10 B 2	003			4	8	9/8/97	1350		K		1		1	X						··-			8	
1001	DPI			0	4	9/8/97	1406		X		<		1	×									9	
10 13 1	DPZ			4	g	9/8/97	1412		K		X		1	X									10	<u>)</u>
10 B1	DPZR					9/8/97	1425	X	*			K	3	K									11	
1034	DPI			6	٤	9/8/97	1450		X		χ		1	7							·		13	
1084	DPID			o	2	9/8/97	1450		1	<u> </u>	X		1	74									13	>
10 B4	DPZ			2	4	9/8/97	1455		X		X			>									14	ے
1084	DP3			ч	8	9/8/97	1505		X		人		1	X						·			15	<u>)                                    </u>
					.]	001																		
Sampler (sig	nature):	2 Cap	<u> </u>	COOLER TEMPERATURE Special WHEN RECEIVED					cial Ir	al Instructions: SCREENED FOR														
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€	(argridation	<del>-</del> /·				(Signal	J. 0/·	٠																_

					Requ	uest for C	Chemical A	nalysis a	and C	hair	of C	usto	dy F	ecor	ď										
	onneli Waste C	Consultants, I	nc.	Labora	tory		775	,						Doc	ume	nt C	ontro	l No	.:						
9400 Ward P Kansas City,	arkway Missouri 64114			Addres	ss		089 E	£. Coll.	, 200	Blu	ر			Lah	. Ref	eren	ce N	o. or			· · · ·		<del></del> -		
Phone: (816)	333-8787 Fax	c: (816) 822-	3463	City/Sta	ate/Zip		Richards								sode										
Attention:	Sharo	n Shelton	,	Telepho	one		238-55				. —														
Project Numb		-448y.00	•	Pro	ject Na		ARMORI			Sar	nple 1	уре				sis/len/	/gt	$\gamma$	/,	/ ,	//				
Site, Group, o	or SWMU Name:	Sum	u (0						1	Matrix	(	<u>i</u>		3 o	4	\$\ \$	X				//	/			
Sample Nu	· · · · · · · · · · · · · · · · · · ·	Sample	Event	S	ample (in fo	Depth	Sar Colle	mple ected	폋	ש		Composite	۵	Number of Containers		/ :	<b>*</b> /	/ /	/ /	/ /	/ /				
Sample Point	Sample Designator	Round	Year	Fre	om	To	Date	Time	Liquid	Solid	Gas	ঠ	Grab	₹8		. ad ka							Remar	'ks	
1035	DPI			,	0	7	9/8/97	1515		X		Y		١	X						((	19	00	-(	$\bigcup$
10 B5	Des				2	4	9/8/97	1520		X		1		1	X										7
1085	003				Ч	8	9/8/87	1525		X		X		١	X										3
(086	DPI				0	2	9/8/97	1530		K		X		١	X										9
10B6	SPZ				2	4	9/8/97	1535		7		Ϋ́		1	X									<u>8</u>	<u> 20</u>
1086	013				4	8	9/8/97	1540	ļ	*		4		<u> </u>	*										77
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						C	OOLER TE	MPERAT	URE				1.		W	10									
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Sampler (sig	nature): Wares	et Sine	سدي					ł	·	<u> </u>	٠	Spe	cial Ir	struct	ions		L			L	L				
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				Re	quest for (	Chemical A	nalysis a	and C	Chair	of C	usto	dy R	ecor	ď						
Burns & McD 9400 Ward F	Donnell Waste C	Consultants,	Inc.	Laboratory		75							Doc	ume	nt C	ontro	ol No	).:		
Kansas City,	Missouri 64114			Address	108	9 E. Col.	lins !	3/~	1.			_	Lab	. Ref	erer	ice N	lo. or			
Phone: (816)	) 333-8787 Fa	x: (816) 822-	3463	City/State/	Zip K	9 E. Col.	n 77	(					Epis	sode	No.:	:				
Attention:	Sharon S	thelfon		Telephone		8 -487														777
Project Numb	ber: ዓィ-492	8-4-004	-05	Project	Name:	ARMCO	RFI		Sar	nple 1	уре				Sis New Y	/ /	/4	/ ,	/ ,	/ / /
Site, Group,	or SWMU Name	: Swme	10		e Time				Matrix	(	ig.		rof ers	-	\$\\\\- \\\\-	\\ .	3/			
Sample N	lumber	Sample	Event	<i>t</i> i	<del>Die-Dep</del> th <del>- feet)</del> س	Sar	mple ected ^	Ē	ъ		Composite		Number of Containers	/		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	7	/ ,	/ /	/ /
Sample Point	Sample Designator	Round	Year	16.7	STOF	Date	Timer	Liquid	Solid	Gas	ဒ်	Grab	₹8		V	9	$\angle$	$\angle$	_	Remarks
FB_	NONE			0900	0901	10/21/97	400		X				1	X	X	12	79	3-	-	Pump How Rote
Al	27149			0900	1815	10/21/97	555		X				1	人	X				0	1.40 lmin.
Pı	27151			0905	T	10/21/97	l		×				1	人	У				3	1.39 Umin.
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Sampler (si																				
Relinquishe	ed By:	a):		Time Re	seived By:	De Talgran	ture):	18 <sup>Da</sup>	te/Tim	19		dition d \	of Shi	ppin air [	g Co	ntair Poo			ce Pr	resent in Container:
Relinquishe			Date	Time Re	ceived By:	. (sianat			te/Tin		Com	ment	s:							

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	rns & McDonnell Waste Consultants, Inc.  Laboratory													Doc	umer	nt Co	ontro	l No	).:								_
	Parkway Missouri 64114			Addre	ss	108	9 E. Co	1625	RI.	 د) .			<del></del>	Lab	. Refe		NI										
	333-8787 Fax		3463	City/S	tate/Zip		hardson								ode l		Ce IV	0. 01									
Attention:	Sharon Sh	e. Han		Teleph	one		) 487-5		<u>, -</u> -	<del></del>							7	7		_	7	7	7	_			_
Project Numb	per: 94-49		5	Pr	oject N		RMCORF			Sar	nple 1	Гуре				8	/ }					' /					i
	or SWMU Name:	·							1	Matrix	(	Ð		ع م 2	ے ا		\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\			/	Ι.	/ ,				(	
Sample N	umber	Sample	Event		Sample	Depth	Sar	nple ected	<u>.</u> 0	_		Composite	_	Number of Containers		- Rep	<b>)</b> /	/ ,	/ ,				ĭ	30	SL		
Sample Point	Sample Designator	Round	Year	F	rom	reet) To	Date	Time	Liquid	Solid	Gas	Com	Grab	₹8	0/	dere				/		/	ſ	Rema			
OCF/	SRI					ス	10/24/97	1015		X			X	1	χ												
10CF1	SRID					2	10/24/97	1020		X			X	-	X						6	)					
10 CF2	SRI					4	10/24/97	0952		X			X	1	X						5	3					
OCF3	SRI					2	(0 /4/97	000		X			X	-	X						1	[					
10CF4	SRI					2	10/24/97	1025		X			X	-	X						Ł	<u> </u>		· · · · · · · · · · · · · · · · · · ·			
OCF5	SRI					2.5	0/24/97			X			χ	_	X		4	C	B	= [	- X	E	<u>)                                    </u>	-OF	1		
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10 CF 5	SRIMSD					2.5	10/24/97	1030		X			አ	1	Х						9			,			
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OCF7	SRI					1.5	10/24/97	1/20		x			χ		X						M						
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ocf9	SRI					1.5	10/24/97			×			×	١	×					L	Wh.	EN I	REC	EIVE	D		
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Sampler (signature): Kanth Schingel						Sp					Spe	cial In	struct	ions:		W. Sand	# 3	25	2 <u>1</u>	ۇ ئى <sub>دىدى</sub> ن	्रास् अर्थः	W.J	i in	FURN			
Sampler (sig	<u>^</u>		_			1								<del></del>													
Relinquished By: Date/Tim  1. (singues 19:3)					te/Time Received By:    Date/Time Condition   Date/Time Commer						tion of Shipping Container:   Ice Present in Container:   Fair   Poor   Yes   No																
				Time	Rece	eived By:	(signati	•		te/Tim		Com	ment								-	-					

APPENDIX D

**Quality Control Evaluation Report** 

#### Memorandum

Burns	Waste
&	Consultants,
McDonnell	Inc.

Date: December 12, 1997

To: Denise Kazmierczak

From: Christine Rice

Re: QA/QC of Analytical Data

Project Number. 94-498-4-004-05 (ARMCORFI)

Soil and air cassette samples were collected between September 8, 1997, and October 24, 1997. The samples were analyzed by Intertek Testing Services Environmental Laboratory (ITS) of Richardson, Texas, for cadmium and lead by SW-846 Method 3050A/6010B.

The sample results were reviewed for the Level III parameters listed on the attached checklists. The checklist items were examined as recommended by EPA's National Functional Guidelines for Organic Data Review (NFGO), 1993, and National Functional Guidelines for Inorganic Data Review (NFGI), 1994. The quality assurance/quality control (QA/QC) review results are discussed below.

- 1. <u>Chain-of-Custody</u> The chain-of-custody (COC) forms were signed by the relinquisher and receiver.
- 2. Requested Analyses Completed All analyses were performed as requested.
- 3. <u>Holding Times</u> All samples were analyzed within the required holding times.
- 4. <u>Sample Preservation Acceptable</u> No problems were noted with the sample preservation.
- 5. <u>Laboratory Method Blanks</u> There were no positive detections of target analytes reported in the method blanks.
- 6. <u>Field Blanks</u> The samples of sample delivery group (SDG) D97-10900 were associated with Field Blank 10B1/DP2R and the air samples of D97-12793 were associated with Field Blank FB. No field blank accompanied the field samples of SDG D97-13024. There were no positive detections of target analytes reported in the field blanks.
- 7. <u>Laboratory Inorganic Duplicates</u> Laboratory duplicates are typically run on inorganic analyses. A sample is split into two portions and analyzed separately. The results of these two portions are compared for reproducibility.

All relative percent differences (RPDs) were within the required QC limit.

8. <u>Matrix Spike/Matrix Spike Duplicates (MS/MSD) for Inorganics</u> - MS/MSDs are typically run on inorganic analyses. A known amount of an analyte is added (spiked) to two portions of the same sample. The results of these two portions are compared against each other for reproducibility. They are also compared against the unspiked portion of the

Burns	Waste
&z	Consultants,
McDonnell	Inc.

Memorandum December 12, 1997 Page 2

sample for the recovery of the spike. The results listed below were not within the guidelines.

ITS performed a MS/MSD analysis on Sample 10B3/DP2 (QC Batch Number AC200-22) and associated it with the field samples of SDG D97-10900. The cadmium MS and MSD percent recoveries (RECs) were 38.7 and 36.3 percent, respectively. These RECs fell below the QC minimum of 75 percent. All detected and undetected cadmium results in the associated samples were qualified as estimated (J\*). In addition, the MS and MSD RECs for lead were 58 and 38 percent, respectively. These RECs fell below the QC minimum of 75 percent. The lead MS/MSD RPD was 41.7 percent, which exceeded the QC limit of 25 percent. All detected and undetected lead results in the associated samples were qualified as estimated (J\*).

The following field samples were associated with the MS/MSD performed on Sample 10CF1/SR1 (QC Batch AC266-20 of SDG D97-13024): 10CF1/SR1, 10CF1/SR1D, 10CF2/SR1, 10CF3/SR1, 10CF4/SR1, 10CF6/SR1, 10CF7/SR1, 10CF8/SR1, 10CF9/SR1, and 10CF10/SR1. For this MS/MSD, the lead spike amount was less than one-fourth the original sample concentration; therefore, no conclusion could be made about the accuracy and/or precision of the lead analyses of the associated samples based upon the MS/MSD results.

ITS performed a MS/MSD analysis on Sample 10CF5/SR1 (QC Batch Number AC266-47 of SDG D97-13024) and associated it with Sample 10CF5/SR1. The cadmium MS and MSD RECs were 72.7 and 71.1 percent, respectively, which fell below the 75 percent QC minimum. Therefore, the cadmium result for associated Sample 10CF5/SR1 was qualified as estimated (J\*). In addition, the lead spike amount was less than one-fourth the original sample concentration; therefore, no conclusion could be made about the accuracy and/or precision of the lead analysis of Sample 10CF5/SR1 based upon the MS/MSD results.

- 9. <u>Laboratory Control Samples (LCS)</u> The LCS contains a matrix similar to that of the sample which has been spiked with known concentrations of target analytes. The LCS is analyzed by the same method as the samples. As a measure of accuracy, the results of this sample are compared against the known analyte concentrations in the spike to determine REC. The purpose of the LCS analysis is to determine the performance of the laboratory with respect to analyte recovery, independent of field sample matrix interferences. All LCS RECs were within the required QC limits.
- 10. <u>Field Duplicates</u> Field duplicate results provide information on the ability to reproduce field results and account for error introduced from handling, shipping, storage, preparation, and analysis of field samples. Two sets of field duplicates were collected during this sampling event. Since there are no specific USEPA guidelines for qualifying

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&z	Consultants,
McDonnell	Inc.

Memorandum December 12, 1997 Page 3

data from field duplicate results, BMWCI has applied the QC limits for inorganic duplicate analyses to the field duplicates:

- Was the same compound detected in both samples?
- Was the RPD less than 35 percent for soil samples?
- For analytes where one of the results was less than five times its detection limit, the results should be within plus or minus two times the detection limit of each other; this criterion is termed the "sensitivity test."

The following positive detections were found:

#### Field Duplicate Pair 10B4/DP1 // 10B4/DP1D

<u>Parameter</u>	10B4/DP1	10B4/DP1D	Meets OC Criteria
Cadmium	6.24 mg/kg J*	8.28 mg/kg J*	Yes (RPD=28%)
Lead	484 mg/kg J*	1000 mg/kg J*	No (RPD=70%)

#### Field Duplicate Pair 10CF1/SR1 // 10CF1/SR1D

<u>Parameter</u>	10CF1/SR1	10CF1/SR1D	Meets OC Criteria
Cadmium	15.7 mg/kg	21 mg/kg	Yes (RPD=28.9%)
Lead	983 mg/kg	747 mg/kg	Yes (RPD=27.3%)

The lead detections of field duplicate Pair 10B4/DP1 // 10B4/DP1D had an RPD of 70 percent, which was greater than the 35 percent QC criteria. With this exception, the field duplicate results were adequately replicated.

- 11. <u>Detection Limits</u> Detection limits were not required to be elevated.
- 12. <u>Conclusion</u> No data were qualified as unusable as a result of the QA/QC data review. As such, the results of this review indicate that the data are valid for use (as qualified) in reporting the results of this investigation.

Attachments

#### **Inorganic Data Validation Checklist**

SDG No.: Project Name: Project No.:	D97-10900 ARMORFI 94-498-4-005	Site: Laboratory: Analysis Type:	ITS Cadmium, lead
Instructions:			
4	Initial and date this form at the start and end	of review for this SDG	
2.	Place a check mark in the "NA" column whe		licable
	When review of a checklist item is complete	• • • • • • • • • • • • • • • • • • • •	
3.	The state of the s	Contract the contract of	
4.	Place an "NS" designation in the "Reviewed		
5.	Place a check mark or an "NR" in the "Qual qualification, respectively.	ified" column if related data did	d or did not require
6.	See "USEPA Contract Laboratory Program	National Functional Guidelines	s for Inorganic Data Review,"
	February 1994, for validation purposes.		,
7.	Level IV review is generally performed on 5-	10% of all sample results; actu	ual percentage is project specific.
8.	Place a check mark in the box at the beginn		

	NA	Reviewed	Qualified	Comments
Level III Review-Item				
Signed Chain-of-Custody Available			NR	d'
Requested Analyses Completed			NR	÷
Holding Times Met			NR	e .
Sample Preservation Acceptable			NR	
Laboratory Method Blank Results			NR	*
Field Blank Results		1	NR	
Laboratory Control Sample Results		V	N.R	
Duplicate Sample Results		V	NR	
Matrix Spike Results		/	NA	
Field Duplicates		/	NR	
Detection Limits		/	NR	
Level IV Review Item		= Summary Shee	ts Only	
Initial Calibrations				
Initial/Continuing Calibration Verification				•
ICP Interference Check Sample Results			20	
ICP Serial Dilution			*	
Enhanced Level IV Review Item	- T		T	949 8 60 8 59
Furnace Atomic Absorption QC				
Sample Result Verification				

Date Started/ Reviewer: 10-2-97 C. Rice

Date Completed/ Reviewer:

10-2-97 C. Rice

#### **Inorganic Data Validation Checklist**

SDG No.: Project Name: Project No.:	D97-13024 ARMCCRF1 G4-498-4-004-05	Site: Laboratory: Analysis Type:	175 Pb, Cd	
Instructions:				
1.	Initial and date this form at the start and en	d of review for this SDG.		
2.	Place a check mark in the "NA" column wh	en the review item was not appl	icable.	
3.	When review of a checklist item is complete	e, place a check mark in the "Re	eviewed" column.	
4.	Place an "NS" designation in the "Reviewed	d" column when applicable data	were not supplied.	
5.	Place a check mark or an "NR" in the "Qua	lified" column if related data did	or did not require	
	qualification, respectively.			
6.	See "USEPA Contract Laboratory Program	National Functional Guidelines	for Inorganic Data Review,"	
	February 1994, for validation purposes.			
7.	Level IV review is generally performed on 5	-10% of all sample results; actu	al percentage is project specific.	
8.	Place a check mark in the box at the beginn	ning of the Level IV section if no	associated raw data were reviewed.	

	NA	Reviewed	Qualified	Comments
Level III Review Item				
Signed Chain-of-Custody Available		V	NR	
Requested Analyses Completed			V	Ed not similar 1005 1+ 100510
Holding Times Met		V	NR	,
Sample Preservation Acceptable		V	NR	
Laboratory Method Blank Results		·V	NR	, X
Field Blank Results	V			
Laboratory Control Sample Results		V	NR	
Duplicate Sample Results		V	NR	
Matrix Spike Results		V	V	Pb low spiked - both bathe
Field Duplicates		k'	NR	IUCFI/SRI + IUCFI/SRID
Detection Limits		V	NR	
Level IV Review Item	<u> </u>	= Summary Shee	ets Only	T
Initial Calibrations				
Initial/Continuing Calibration Verification				
ICP Interference Check Sample Results				
ICP Serial Dilution		NUMBER OF THE PROPERTY OF THE		
Enhanced Level IV Review Item			T	
Furnace Atomic Absorption QC				
Sample Result Verification				

Date Started	1
Reviewer:	

11-13-9	1/shelten

Date Completed/ Reviewer:

11.13 97/5/cc/tog

#### **Inorganic Data Validation Checklist**

SDG No.: Project Name: Project No.:	D97-13793       Site:       SLOMU 10         ARMCORFI       Laboratory: $17S$ 94-498-4-004-05       Analysis Type: $Cd$ , $Pb$
Instructions:	Air Cassettes
1.	Initial and date this form at the start and end of review for this SDG.
2.	Place a check mark in the "NA" column when the review item was not applicable.
3.	When review of a checklist item is complete, place a check mark in the "Reviewed" column.
4.	Place an "NS" designation in the "Reviewed" column when applicable data were not supplied.
5.	Place a check mark or an "NR" in the "Qualified" column if related data did or did not require qualification, respectively.
6.	See "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,"
	February 1994, for validation purposes.
7.	Level IV review is generally performed on 5-10% of all sample results; actual percentage is project specific.
8.	Place a check mark in the box at the beginning of the Level IV section if no associated raw data were reviewed.

	NA	Reviewed	Qualified	Comments
Level III Review Item			1	
Signed Chain-of-Custody Available		r.	NR	•
Requested Analyses Completed			NZ	4
Holding Times Met			NZ	
Sample Preservation Acceptable		1-	NR	
Laboratory Method Blank Results		1	NR	* *
Field Blank Results		1	NR	
Laboratory Control Sample Results		b	NR	
Duplicate Sample Results	v.	-		-
Matrix Spike Results		1	NR	2001 BS/BSD
Field Duplicates	V'			
Detection Limits		V.	NR	
Level IV Review Item		= Summary Shee	ets Only	1
Initial Calibrations				7
Initial/Continuing Calibration Verification				
ICP Interference Check Sample Results		3		
ICP Serial Dilution				
Enhanced Level IV Review Item		I	T	
Furnace Atomic Absorption QC				
Sample Result Verification				

Date Started/ Reviewer:

11-13-97/5/w/ton

Date Completed/ Reviewer: 11.13.97/Shilten

APPENDIX E

**Analytical Laboratory Data** 

Sample Delivery Group D97-10900

#### Received 9.19.97 Shacing Skellery TS Intertek Testing Services Environmental L. 18 Environmental Laboratories

DATE RECEIVED: 9-Sep-1997

REPORT NUMBER: D97-10900

REPORT DATE: 18-Sep-1997

SAMPLE SUBMITTED BY: Burns and McDonnell Waste Consultants, Inc.

ADDRESS: 9400 Ward Parkway

Kansas City, MO 64114

ATTENTION: Ms. Sharon Shelton PROJECT: 94-498-4-03 ARMCORFI

DATE SAMPLED: 8-Sep-1997

#### CASE NARRATIVE COMMENTS:

The results were reported on a dry weight basis, having been corrected for total solids.

No issues were noted during the sample analysis of this job.

Please refer to the attached case narrative summary for sample identifications, and analytical requests.

If you have any questions, please call Mr. Keith Partin at (972) 238-5591.

Data Revi

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell PROJECT : 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-1 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B3#DP1							
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER		
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
SOLID_TPER /1			RMC	16-SEP-1997	214054A		

SAMPLE ID : D97 ID MARKS : 108		-2 DATE SAF	MPLED :	8-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
SOLID_TPER /1			RMC	16-SEP-1997	214054A

SAMPLE ID : D97 ID MARKS : 108			MPLED	: 8-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22

SAMPLE ID : D97 ID MARKS : 108			MPLED	: 8-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell

PROJECT : 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-5 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B3#DP3							
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER		
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
SOLID_TPER /1			RMC	15-SEP-1997	214054A		

SAMPLE ID : D97-10900-6 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B2#DP1							
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER		
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
SOLID_TPER /1			RMC	16-SEP-1997	214054A		

SAMPLE ID : D97-10900-7 DATE SAMPLED : 8-SEP-1997 ID MARKS : 1082#DP2							
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER		
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22		
SOLID_TPER /1			RMC	16-SEP-1997	214054A		

SAMPLE ID : D97-10900-8 DATE SAMPLED : 8-SEP-1997 ID MARKS : 1082#DP3									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214054A				

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell

PROJECT: 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-9 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B1#DP1									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214054A				

SAMPLE ID : D97-10900-10 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B1#DP2									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214054A				

SAMPLE ID : D97-10900-11 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B1#DP2R								
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER			
M_CD_TADLP /1	CEL	15-SEP-1997	GAY	15-SEP-1997	AC200-84			
M_PB_TADLP /1	CEL	15-SEP-1997	GAY	15-SEP-1997	AC200-84			

SAMPLE ID : D97-10900-12 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B4#DP1									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214054A				

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell

PROJECT: 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-13 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B4#DP1D								
ANALYSIS	PRP	PRP DATE	ANL.	ANL DATE	QC BATCH NUMBER			
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
SOLID_TPER /1			RMC	16-SEP-1997	214054A			

SAMPLE ID : D97-10900-14 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B4#DP2									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214055B				

SAMPLE ID : D97-10900-15 DATE SAMPLED : 8-SEP-1997 ID MARKS : 1084#DP3								
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER			
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
SOLID_TPER /1			RMC	16-SEP-1997	214055B			

SAMPLE ID : D97-10900-16 DATE SAMPLED : 8-SEP-1997 ID MARKS : 1085#DP1									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214055B				

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell

PROJECT : 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-17 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B5#DP2								
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER			
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22			
SOLID_TPER /1			RMC	16-SEP-1997	214055B			

SAMPLE ID : D97-10900-18 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B5#DP3									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214055B				

SAMPLE ID : D97-10900-19 DATE SAMPLED : 8-SEP-1997 ID MARKS : 10B6#DP1									
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER				
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22				
SOLID_TPER /1			RMC	16-SEP-1997	214055B				
SOLID_TPER /2			RMC	16-SEP-1997	214055B				

SAMPLE ID : D97 ID MARKS : 108		-20 DATE SAF	1PLED	: 8-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
SOLID_TPER /1			RMC	16-SEP-1997	214055B

JOB ID : D97-10900

CUSTOMER : Burns & McDonnell

PROJECT : 94-498-4-004-03 ARMCORFI

SAMPLE ID : D97-10900-21 DATE SAMPLED : 8-SEP-1997 ID MARKS : 1086#DP3					
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
SOLID_TPER /1			RMC	16-SEP-1997	214055B

SAMPLE ID : D97 ID MARKS : LAB		-22 DATE SAP	1PLED	: 9-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22
M_PB_THPSP /1	CEL	10-SEP-1997	GAY	10-SEP-1997	AC200-22

SAMPLE ID : D97 ID MARKS : LAB		-23 DATE SA	MPLED :	: 9-SEP-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_TADLP /1	CEL	15-SEP-1997	GAY	15-SEP-1997	AC200-84
M_PB_TADLP /1	CEL	15-SEP-1997	GAY	15-SEP-1997	AC200-84

ANALYSIS	DESCRIPTION
M_CD_THPSI	Cadmium, Total, Hot Plate, Solid, by ICP
M_PB_THPSP	Lead, Acid Digestion, Hot Plate, PE, Solid
SOLID_TPER	Total Solids, Soil/Sludge, %
M_CD_TADLP	Cadmium, Total, Hot Plate, Liquid, by PE-ICP
M_PB_TADLP	Lead, Total, Hot Plate, Liquid, by PE-ICP

DATE RECEIVED : 9-SEP-1997

REPORT NUMBER : D97-10900 REPORT DATE : 18-SEP-1997

SAMPLE SUBMITTED BY : Burns & McDonnell

ADDRESS: 4800 East 63rd Street

: Kansas City, MO 64130

ATTENTION : Ms. Sharon Shelton

PROJECT : 94-498-4-004-03 ARMCORFI

Included in this data package are the analytical results for the sample group which you have submitted to Intertek Testing Services for analysis.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative.

If you have any questions regarding this report and its associated materials please call your Project Manager at (214) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

> Martin Jeffus General Manager

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-1
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP1
DATE SAMPLED:	8-SEP-1997	. :	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESUL	TS	FLAG
Cadmium	1	0.56	18.0	mg/Kg	
Prepared using EPA 3050 on 10-8 Analyzed using EPA 6010A on 10-	-SEP-1997 by GAY				
QC Batch No : AC200-22 Method Factor : 1					·
	1	0.560	1080	mg/Kg	



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-1
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
	0.01	89.2 %	
	d. on 16-SEP-1997 by RMC		

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-2
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESU	JLTS	FLAG
Cadmium	1	0.59	11.2	mg/Kg	
Prepared using EPA 3050 on Analyzed using EPA 6010A o QC Batch No : AC200-22 Method Factor : 1	on 10-SEP-1997 by GAY	0.589	226	mg/Kq	1

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-2
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	84.8 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-3
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP2MS
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.50	28.9 mg/Kg	
Prepared using EPA 3050 on 10 Analyzed using EPA 6010A on 1 QC Batch No : AC200-22 Method Factor : 1	10-SEP-1997 by GAY	0.500	250 mg/Kg	
Lead			250 mg/Kg	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-4
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP2MSD
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.50	27.7 mg/K	(g
Prepared using EPA 3050 on 10-S Analyzed using EPA 6010A on 10- QC Batch No : AC200-22 Method Factor : 1	SEP-1997 by GAY	0.500	220 //	
Lead	1 1	0.500	230 mg/K	g į

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-5
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

Cadmium	1	0.55		
	_	0.66	0.46 mg/Kg	J
Analyzed using EPA 6010A on 10 QC Batch No : AC200-22 Method Factor : 1	1 1	0.660	13.6 mg/Kg	
		0.880	13.6 119/19	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-5
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B3#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	75.8 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-6
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B2#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.53	5.79 mg/I	(g
Prepared using EPA 3050 on 1 Analyzed using EPA 6010A on	10-SEP-1997 by CEL 10-SEP-1997 by GAY			
QC Batch No : AC200-22 Method Factor : 1				
	1	0.529	306 mg/F	(g



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-6
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B2#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	94.5 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-7
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	1CB2#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

DETECTION LIMIT 0.54	RESULTS 3.84 mg/Kg	FLAG
0.54	3.84 mg/Kg	
0.537	107 mg/Kg	
	0.537	0.537 107 mg/Kg



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-7
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B2#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION · FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cotal Solids		0.01	93.1 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-8
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B2#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.54	0.28 mg/Kg	J
QC Batch No : AC200-22 Method Factor : 1			13.7 mg/Kg	



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-8
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B2#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	77.9 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-9
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B1#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULT	re	FLAG
	DIEGITOR TACTOR	1		·	TIAG
Cadmium	1	0.56	5.43	mg/Kg	
Method Factor : 1		0.556	188	mq/Kq	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-9
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B1#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	89.9 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-10
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B1#DP2
DATE SAMPLED:	8-SEP-1997	. :	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.65	0.30 mg/Kg	J
<pre>Prepared using EPA 3050 on 1 Analyzed using EPA 6010A on OC Batch No : AC200-22</pre>	10-SEP-1997 by GAY			
Method Factor: 1				
	1	0.646	12.6 mg/Kg	· I

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-10
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B1#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	77.3 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-11
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B1#DP2R
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:	·	PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Liquid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT		RESULTS	FLAG
Cadmium	1	0.0050	<	0.0050 mg/L	Ü
' Prepared using EPA 3010 on 15 Analyzed using EPA 6010A on 1 QC Batch No : AC200-84 Method Factor : 1		0.0030	r -		



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-12
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.57	6.24 mg/Kg	
Analyzed using EPA 6010A on 1 QC Batch No : AC200-22	to out 1337 by GRI			
Method Factor : 1				
Method Factor : 1	1	0.569	484 mg/Kg	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-12
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	87.8 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-13
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP1D
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.56	8.28 mg/Kg	
Prepared using EPA 3050 on 10- Analyzed using EPA 6010A on 10 QC Batch No : AC200-22	0-SEP-1997 by GAY			
Method Factor : 1			<u> </u>	
Method Factor : 1	1 1	0.559	1000 mg/Kg	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-13
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP1D
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	89.4 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-14
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.59	1.84 mg/Kg	
' Prepared using EPA 3050 on Analyzed using EPA 6010A or QC Batch No : AC200-22	1 10-SEP-1997 by GAY			
Method Factor : 1		0.589		



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-14
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	85.0 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-15
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP3
DATE SAMPLED:	8-SEP-1997	:.	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.64	0.27 mg/Kg	J
Analyzed using EPA 6010A on 10- QC Batch No : AC200-22 Method Factor : 1	522 255, 27 GHZ			



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-15
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B4#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	77.8 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-16
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED		DILUTION FACTOR	DETECTION LIMIT	RESU	LTS	FLAG
Cadmium	41.5	1	0.58	16.8	mg/Kg	
Analyzed using EPA 601 QC Batch No : AC200-22 Method Factor : 1	LOA on 10-S	EP-1997 by GAY	T			
Lead		1	0.577	858	mg/Kg	!



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-16
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES		<del>,</del>		<del></del>
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	86.6 %	
Analyzed using ASTM D2216 mod. o QC Batch No: 214055B Method Factor: 1	n 16-SEP-1997 by RMC		00.0	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-17
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.57	4.70 mg/Kg	
Analyzed using EPA 6010A on 10-S QC Batch No : AC200-22 Method Factor : 1	SEP-1997 by GAY	0.572	698 mg/Kg	<del></del>



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-17
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	87.4 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 214055B Method Factor : 1	16-SEP-1997 by RMC			J

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-18
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.66	0.61 mg/Kg	J
Analyzed using EPA 6010A on 10 QC Batch No : AC200-22 Method Factor : 1	-32F-1997 By GRI		13.1 mg/Kg	



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-18
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B5#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	75.4 %	
' Analyzed using ASTM D2216 mod. on QC Batch No : 214055B Method Factor : 1	16-SEP-1997 by RMC			

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-19
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B6#DP1
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

				FLAG
1	0.56	22.3	mg/Kg	
0-SEP-1997 by GAY	0.557	1150	/v-	<del>-1 :</del>
	1 -SEP-1997 by CEL 0-SEP-1997 by GAY	-SEP-1997 by CEL	-SEP-1997 by CEL 0-SEP-1997 by GAY	-SEP-1997 by CEL 0-SEP-1997 by GAY

DATE RECEIVED: 9-SEP-1997	REPORT NUMBER: D97-10900-19
REPORT DATE: 18-SEP-1997 08:35:05.31	ID MARKS: 10B6#DP1
DATE SAMPLED: 8-SEP-1997	:
PURCHASE ORDER:	PROJECT: 94-498-4-004-03 ARMCORFI
SAMPLE MATRIX: Solid	

TEST REQUESTED .	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	91.7 %	
' Analyzed using ASTM D2216 mod. or OC Batch No : 214055B	16-SEP-1997 by RMC	:		
Method Factor: 1			·	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-20
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B6#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TOTAL METALS		·		
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.66	11.3 mg/Kg	
Analyzed using EPA 6010A on 10-S QC Batch No : AC200-22	EP-1997 by GAY			
Method Factor : 1				



DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-20
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B6#DP2
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	75.3 ₺	
/ Analyzed using ASTM D2216 mod. on QC Batch No : 214055B Method Factor : 1	16-SEP-1997 by RMC			

DATE RECEIVED: 9-SEP-1997	REPORT NUMBER: D97-10900-21
REPORT DATE: 18-SEP-1997 08:35:05.31	ID MARKS: 10B6#DP3
DATE SAMPLED: 8-SEP-1997	:
PURCHASE ORDER:	PROJECT: 94-498-4-004-03 ARMCORFI
SAMPLE MATRIX: Solid	

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.66	0.63 mg/Kg	J
' Prepared using EPA 3050 on 10-S Analyzed using EPA 6010A on 10- QC Batch No : AC200-22 Method Factor : 1	SEP-1997 by GAY			
Lead		1 0 664 1	248 mar/Kar	į.
	1 -	0.664	24.8	mg/Kg

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-21
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	10B6#DP3
DATE SAMPLED:	8-SEP-1997	:	
PURCHASE ORDER:	77.	PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	75.3 %	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-22
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	LABQC
DATE SAMPLED:	9-SEP-1997	:	MB
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT		RESULTS	FLAG
Cadmium	1	0.50	<	0.50 mg/Kg	U
Prepared using EPA 3050 on 1 Analyzed using EPA 6010A on	10-SEP-1997 by GAV				
QC Batch No : AC200-22 Method Factor : 1	TO-SHE-1997 By GAT				
QC Batch No : AC200-22	10-511-1337 by GA1	0.500	<	0.500 mg/Kg	

DATE RECEIVED:	9-SEP-1997	REPORT NUMBER:	D97-10900-23
REPORT DATE:	18-SEP-1997 08:35:05.31	ID MARKS:	LABQC
DATE SAMPLED:	9-SEP-1997	:	МВ
PURCHASE ORDER:		PROJECT:	94-498-4-004-03 ARMCORFI
SAMPLE MATRIX:	Liquid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	Ì	RESULTS	FLAG
Cadmium	1	0.0050	<	0.0050 mg/L	Ū
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	- 15 ODD 1007 h CNV				
Analyzed using EPA 6010A or QC Batch No : AC200-84 Method Factor : 1	1 15-SEP-1997 By GAT	0.0030	<	0.0030 mg/L	TI TI

REPORT DATE: 18-SEP-1997

REPORT NUMBER : D97-10900

SAMPLE SUBMITTED BY : Burns & McDonnell

ATTENTION: Ms. Sharon Shelton

#### LABORATORY QUALITY CONTROL REPORT

ANALYTE	Cadmium	Cadmium	Lead	Lead
BATCH NO.	AC200-84	AC200-22	AC200-84	AC200-22
LCS LOT NO.	AB300-100	AB300-97	AB300-100	AB300-97
PREP METHOD	EPA 3010	EPA 3050	EPA 3010	EPA 3050
PREPARED BY	CEL	CEL	CEL	CEL
ANALYSIS METHOD	EPA 6010A	EPA 6010A	EPA 6010A	EPA 6010A
ANALYZED BY	GAY	GAY	GAY	GAY
UNITS	mg/L	mg/Kg	mg/L	mg/Kg
METHOD BLANK	< 0.00500	< 0.500	< 0.00300	< 0.500
SPIKE LEVEL	0.500	50.0	1.00	100
SPK REC LIMITS	80.0 - 120	75.0 - 125	80.0 - 120	75.0 - 125
SPK RPD LIMITS	20.0	25.0	20.0	25.0
MS RESULT	0.483	28.9	0.971	250
MS RECOVERY %	96.6	38.7 B	97.1	58.0 B
MSD RESULT	0.473	27.7	0.961	230
MSD RECOVERY %	94.6	36.3 B	96.1	38.0 B
MS/MSD RPD %	2.09	6.40 B	1.04	41.7 B
BS RESULT	NA	NA NA	NA	NA
BS RECOVERY %	NA	NA NA	NA	NA
BSD RESULT	NA	NA NA	NA	NA
BSD RECOVERY %	NA	NA NA	NA	NA
BS/BSD RPD %	NA	NA	NA	NA
DUP RPD LIMITS		25.0		25.0
DUPLICATE RPD %	NC	18.7	NC	3.53
LCS LEVEL	0.500	50.0	1.00	100
LCS REC LIMITS	80.0 - 120	75.0 - 125	80.0 - 120	75.0 - 125
LCS RESULT	0.511	47.7	1.02	95.0
LCS RECOVERY %	102	95.4	102	95.0
SPIKE SAMPLE ID	11050-1	10900-2	11050-1	10900-2
SAMPLE VALUE	< 0.00500	9.54	< 0.00300	192
DUP SAMPLE ID	11050-1	10900-2	11050-1	10900-2
DUP SAMPLE VAL/1		7.91		199
DUP SAMPLE VAL/2		9.54		192

Not applicable Not calculable Not applicable due to matrix interference in the QC Sample.

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	onnell Waste C	onsultants,	Inc.	Laboratory		775	,						Doc	umei	nt C	ontro	l No	).:		-	
9400 Ward Park Kansas City,	arkway Missouri 64114			Address	100	89 E.C	Mas t	3/00	<i>)</i> . '				Lab	. Refe	eren	ce N	o. or		\ F		
Phone: (816)	333-8787 Fax	: (816) 822	-3463	City/State/Zi	p Re	chardso-	~ >x		508	51				sode					<u>)</u>	RIGINA	$\Delta L$
Attention:	Sharon S	helto-		Telephone	(97	2) 238-	5591														1
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	r SWMU Name:			<del></del>					Matrix		site		erof Sers	4		e/					
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10 B2	DPI			0	2	9/8/97	1340	_	X		+	*	1	X					<u> </u>		<u>· (o</u>
1082	DPZ		!	2	፟	918197	1345		X		1		1	X							
10 B 2	003			4	8	9/8/97	1350		8		1		1	X							8
1001	DPI		! 	0	4	9/8/97	1408		χ		✓		1	<			<u></u>				9
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1084	DPID			0	2	9/8/57	1450		1		K		1	7							13
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	Missouri 64114			Addre	ess		1089 E	=. 6/1.	<i>פעק</i> י	Blu	ر.			Lab	. Ref	eren	ce N	o. or						<del></del>
Phone: (816)	333-8787 Fax				tate/Zip	)	Richards	en TX	7.5	08				Epi	sode	No.:								
Attention:	Sharo	n Shelfo	<u>،</u>	Teleph	none	(472	) 238 - 55	9/									$\overline{}$	$\sqrt{}$	$\overline{}$	7	7/	7-7-		
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10 B5	Dez				2	7	9/8/97	1520	<u> </u>	X		1		1	X	ļ	ļ.							17
1035	003				ч	8	9/8/97	1525		X		X		1	X		<b> </b>						·	18
1086	194				0		9/8/97	1530		K	<u>  :</u>	X		1	X					1	·			19
10B6	DPZ		<del>- , </del>		2	4	9/8/97	1535	<u> </u>	1		χ.		1	X						ļ			<u> 50</u>
1086	043				4	8	9/8/87	1540		*		*		1	*	<u> </u>	ļ 				<del> </del>			91
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ITC	<b>Intertek Testing Services</b>
$\mathbf{T} \mathbf{T} \mathbf{D}$	Environmental Laboratories

#### SAMPLE PRESERVATION INFORMATION SHEET

Preserved By	XX	44 .	JOB NU	<b>JMBER</b>			
Date	9-9	977		,	100	900	)
Time			Client Nan	ne Bi	wns	+ m	Dunnell
Sample No.	Container Type	Apparent Volume (mLs)	Initial pH* (20± 2° C)	Final pH	Preservative Added	Filtration	Comments
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pH Duplicate (maximum	difference - C	) 3)·		PRESERVATION	ON / FILTRATIO	N KEY	
	0 0 -1	J. <b>C</b> J.	<>	1 = Pre-preser 2 = H <sub>2</sub> SO <sub>4</sub> to	ved pH<2	5 = NaC 6 = Na <sub>2</sub>	OH to pH>12 S <sub>2</sub> O <sub>3</sub> (0.008%)
pH LCS (ph = 7.0 ± 0.2):	<del> </del>			$3 = HNO_3$ to p 4 = HCi to pH<		,	L Zn OAc/NaOH to pH>12 Preservative Required
Lot Number: 50			1'(,0	F = Chain-of-C	custody indicates	sample was	filtered in the field

<sup>\*</sup> The initial pH balance is determined in accordance with EPA methods 150.1 / SW-846 9040 using a sample of aliquot which has been adjusted to 20 ± 2°C

Sample Delivery Group D97-12793

DATE RECEIVED: 22-Oct-1997

REPORT NUMBER: D97-12793

REPORT DATE: 23-OCT-1997

SAMPLE SUBMITTED BY : Burns and McDonnell Waste Consultants, Inc.

ADDRESS: 9400 Ward Parkway

Kansas City, MO 64114

ATTENTION : Mr. Sharon Shelton

PROJECT : 94-498-4-004-05 ARMCORFI

DATE SAMPLED : 21-Sep-1997

#### CASE NARRATIVE COMMENTS:

The results were reported on a dry weight basis, having been corrected for total solids.

No issues were noted during the sample analysis of this job.

Please refer to the attached case narrative summary for sample identifications, and analytical requests.

If you have any questions, please call Mr. Keith Partin at (972) 238-5591.

Amy Pence Data Review/OC

JOB ID: D97-12793

CUSTOMER : Burns & McDonnell Waste Consultants, Inc.

PROJECT: 94-498-4-004-05 ARMCORFI

SAMPLE ID : D97 ID MARKS : FB#		-1 DATE SAI	MPLED	: 21-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_T_A_I /1	CEL	23-OCT-1997	GAY	23-OCT-1997	AC263-45
M_PB_T_A_I /1	CEL	23-0CT-1997	GAY	23-0CT-1997	AC263-45

SAMPLE ID : D97 ID MARKS : A1#		-2 DATE SAI	MPLED	: 21-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_T_A_I /1	CEL	23-0CT-1997	GAY	23-OCT-1997	AC263-45
M_PB_T_A_I /1	CEL	23-0CT-1997	GAY	23-0CT-1997	AC263-45

SAMPLE ID : D97 ID MARKS : P1#		-3 DATE SAF	1PLED	: 21-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_T_A_I /1	CEL	23-OCT-1997	GAY	23-0CT-1997	AC263-45
M_PB_T_A_I /1	CEL	23-OCT-1997	GAY	23-0CT-1997	AC263-45

ANALYSIS	DESCRIPTION
M_CD_T_A_I	Cadmium, Total, Air, by ICP
M_PB_T_A_I	Lead, Total, Air, by ICP

DATE RECEIVED : 22-OCT-1997

REPORT NUMBER : D97-12793 REPORT DATE : 23-OCT-1997

SAMPLE SUBMITTED BY : Burns & McDonnell Waste Consultants, Inc.

ADDRESS: 9400 Ward Parkway

: Kansas City, MO 64114

ATTENTION : Sharon Shelton

PROJECT : 94-498-4-004-05 ARMCORFI

Included in this data package are the analytical results for the sample group which you have submitted to Intertek Testing Services for analysis.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative.

If you have any questions regarding this report and its associated materials please call your Project Manager at (214) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

Martin Jeffus General Manager

DATE RECEIVED:	22-OCT-1997	REPORT NUMBER:	D97-12793-1
REPORT DATE:	23-OCT-1997 18:28:23.68	ID MARKS:	FB#
DATE SAMPLED:	21-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004-05 ARMCORFI
SAMPLE MATRIX:	Air		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS			FLAG
Cadmium	1	1.0	< 1.0		μg/m³	Ū
Analyzed using EPA 6010B on 23-0 QC Batch No : AC263-45 Method Factor : 1	OCT-1997 by GAY					

DATE RECEIVED: 22-OCT-1997	REPORT NUMBER:	D97-12793-2
REPORT DATE: 23-OCT-1997 18:28:23.68	ID MARKS:	A1#27149
DATE SAMPLED: 21-OCT-1997	:	
PURCHASE ORDER:	PROJECT:	94-498-4-004-05 ARMCORFI
SAMPLE MATRIX: Air		

DILUTION FACTOR	DETECTION LIMIT		RESU	LTS	FLAG
1	1.0	<	1.0	μg/m³	ט
CT-1997 by GAY	1.0		1.0	μq/m³	
	1 CT-1997 by CEL CT-1997 by GAY	1 1.0	1 1.0 < CT-1997 by CEL CT-1997 by GAY	1 1.0 < 1.0  CT-1997 by CEL  CT-1997 by GAY	1 1.0 < 1.0 μg/m³  CT-1997 by CEL  CT-1997 by GAY

DATE RECEIVED:	22-OCT-1997	REPORT NUMBER:	D97-12793-3	
REPORT DATE:	23-OCT-1997 18:28:23.68	ID MARKS:	P1#27151	
DATE SAMPLED:	21-OCT-1997	:		
PURCHASE ORDER:		PROJECT:	94-498-4-004-05 ARMCORFI	
SAMPLE MATRIX:	Air			

1 1997 by CEL	1.0	<	1.0	μq/m³	U
1997 by CEL	·			F- 3.	1 0
1997 by CEL 1997 by GAY	_	,			
1	1.0	<	1.0	μg/m³	U
	1 1997 by CEL 1997 by GAY	1 1.0	1 1.0 <	1 1.0 < 1.0	1 1.0 < 1.0 μg/m³

REPORT DATE : 24-OCT-1997

REPORT NUMBER : D97-12793

SAMPLE SUBMITTED BY : Burns & McDonnell Waste Consultants, Inc. ATTENTION : Sharon Shelton

### LABORATORY QUALITY CONTROL REPORT

ANALYTE	1			
ANALYTE	Cadmium	Lead		
BATCH NO.	AC263-45	AC263-45		
LCS LOT NO.	AC223-03	AC223-03		
PREP METHOD	EPA 3050A	EPA 3050A		
PREPARED BY	CEL	CEL		
ANALYSIS METHOD	EPA 6010B	EPA 6010B		
ANALYZED BY	GAY	GAY		
UNITS	μg/m³	μg/m³		
METHOD BLANK	< 1.00	< 1.00		
SPIKE LEVEL	50.0	100		
SPK REC LIMITS	75.0 - 125	75.0 - 125		
SPK RPD LIMITS	25.0	25.0		
MS RESULT	NA	NA		
MS RECOVERY %	NA	NA		
MSD RESULT	NA	NA		
MSD RECOVERY %	NA	NA		
MS/MSD RPD %	NA	NA		
BS RESULT	51.8	104		
BS RECOVERY %	104	104		
BSD RESULT	51.5	103		
BSD RECOVERY %	103	103		
BS/BSD RPD %	0.58	0.97		
DUP RPD LIMITS	***			
DUPLICATE RPD %	NA	NA		
LCS LEVEL	50.0	100		
LCS REC LIMITS	75.0 - 125	75.0 - 125		
LCS RESULT	51.3	102		
LCS RECOVERY %	103	102		
SPIKE SAMPLE ID				
SAMPLE VALUE	~ -			
DUP SAMPLE ID				
DUP SAMPLE VAL/1				

NA

Not applicable

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	Donnell Waste (	Consultants,	Inc.	Laborato	ory	ユ	75							Doc	ume	nt C	ontro	ol No	).:		
	, Missouri 64114			Address		1089	F. Col.	lins !	3/~	J,			_	Lab	. Ref	eren	ice N	o. or			
Phone: (816	) 333-8787 Fax	x: (816) 822-	3463	City/Stat	e/Zip	R	TE. Col.	4 72							sode						
Attention:	Sharon S	shelfon		Telephon	10		8 .487										7	7	7	$\overline{}$	////
Project Num	ber: 94-49	8.4-004	-05	Proje	ect Nan	ne:	ARMCO	RFI		Sar	mple 7	Гуре				Sisting!	/ ,	\d	/ ,	/ ,	
	or SWMU Name	<del></del>		Sam	ple i	Time			.	Matrix	<b>(</b>	g		r of ers	Ą			Ž			
Sample N	<del></del>	Sample	Event		mple-E <del>(in fee</del>	<del>Dop</del> th	Sar Colle	nple ected	Ę	g	6	Composite	q	Number of Containers	/	3		7	/ /	/ /	/ /
Sample Point	Sample Designator	Round	Year		٠ ج	\$7 of	Date	Time*	Liquid	Solid	Gas	ঠ	Grab Num Cont			<b>Y</b> (			$\angle$	/.	Remarks
FB	NOME	/		0900		901	10/21/97	croo		X				1	X	X	13	79	3-		Pump How Rote
Al	27/49	/		090	0 18	815	10/21/97	555		X				1	メ	X				2	1.40 l/min.
PI	27151			090	5 18	820	10/21/97	555		メ				1	人	×			L,	3	1.39 Umin.
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Sampler (si	ignature):	net Sa				1	· · · · · · · · · · · · · · · · · · ·			اا	\	Spec	ial In:	structi	ions:	K	USK	2	Y H	· · ·	Turnstand
Sampler (si			( د کانوها که خوا	<b></b>																	
Relinquish		<u></u>	Date/	Time F	Repeiv	ed By:	0,-	$\geq$	10Da	e/Tim	9	Cond	fition	of Ship	pping		ntain			e Pr	esent in Container:
1. Relinquish	ed By:		Date/1		Receive	ed By:	<b>W</b> Signati	ure):		e/Tim		Comr				L_	1 001			99	1 100-1
2.	(signatur	е):					. (signatu	ure):		· ·											

Sample Delivery Group D97-13024

Received 11/11/97 sharen Shelton

# ITS Intertek Testing Services Environmental Laboratories

DATE RECEIVED: 28-Oct-1997

REPORT NUMBER: D97-13024

REPORT DATE: 10-Nov-1997

SAMPLE SUBMITTED BY : Burns and McDonnell Waste Consultants, Inc.

ADDRESS: 9400 Ward Parkway

Kansas City, MO 64114

ATTENTION: Ms. Sharon Shelton

PROJECT: 94-498-4-004-05 ARMCORFI

DATE SAMPLED: 24-Oct-1997

### CASE NARRATIVE COMMENTS:

The results were reported on a dry weight basis, having been corrected for total solids.

No issues were noted during the sample analysis of this job.

Please refer to the attached case narrative summary for sample identifications, and analytical requests.

If you have any questions, please call Mr. Keith Partin at (972) 238-5591.

Data Rev

JOB ID : D97-13024

CUSTOMER : Burns & McDonnell Waste Consultants, Inc. PROJECT : 94-498-4-004.05 ARMCORFI

ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GΛΥ	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100			4PLED	: 24-0CT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100		-3 DATE SAI	MPLED	: 24-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100	_	-4 DATE SAI	MPLED	: 24-0CT-1997		
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH N	JMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
SOLID_TPER /1			JJH	5-NOV-1997	274052	

JOB ID : D97-13024

CUSTOMER : Burns & McDonnell Waste Consultants, Inc.

PROJECT : 94-498-4-004.05 ARMCORFI

SAMPLE ID : D97-13024-5 DATE SAMPLED : 24-OCT-1997 ID MARKS : 10CF4#SR1								
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER			
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20			
M_PB_THPSP /1	CEL	4-NOV-1997	GAY ·	4-NOV-1997	AC266-20			
SOLID_TPER /1			JJH	5-NOV-1997	274052			

SAMPLE ID : D97 ID MARKS : 100		-6 DATE SAI	MPLED	: 24-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
M_PB_THPSP /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
SOLID_TPER /1			ήJΗ	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100			MPLED	: 24-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
M_PB_THPSP /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100			MPLED	: 24-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
M_PB_THPSP /2	CEL	6-NOV-1997	GAY	7-NOV-1997	AC266-47
SOLID_TPER /1			JJH	5-NOV-1997	274052

JOB ID : D97-13024

CUSTOMER : Burns & McDonnell Waste Consultants, Inc.

PROJECT : 94-498-4-004.05 ARMCORFI

SAMPLE ID : D97-13024-9 DATE SAMPLED : 24-OCT-1997 ID MARKS : 10CF6#SR1					
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : 100		-10 DATE SA	MPLED	: 24-OCT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97-13024-11 DATE SAMPLED : 24-OCT-1997 ID MARKS : 10CF8#SR1						
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER	
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
SOLID_TPER /1			JJH	5-NOV-1997	274052	

SAMPLE ID : D97-13024-12 DATE SAMPLED : 24-OCT-1997 !D MARKS : 10CF9#SR1						
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER	
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20	
SOLID_TPER /1			JJH	5-NOV-1997	274052	

JOB ID : D97-13024

CUSTOMER : Burns & McDonnell Waste Consultants, Inc.

PROJECT : 94-498-4-004.05 ARMCORFI

SAMPLE ID : D97 ID MARKS : 100			MPLED	: 24-0CT-1997	
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
SOLID_TPER /1			JJH	5-NOV-1997	274052

SAMPLE ID : D97 ID MARKS : LAB			IPLED	: 24-OCT-1997	,
ANALYSIS	PRP	PRP DATE	ANL	ANL DATE	QC BATCH NUMBER
M_CD_THPSI /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20
M_PB_THPSP /1	CEL	4-NOV-1997	GAY	4-NOV-1997	AC266-20

ANALYSIS	DESCRIPTION
M_CD_THPSI	Cadmium, Total, Hot Plate, Solid, by ICP
M_PB_THPSP	Lead, Acid Digestion, Hot Plate, PE, Solid
SOLID_TPER	Total Solids, Soil/Sludge, %

DATE RECEIVED : 28-OCT-1997

REPORT NUMBER : D97-13024

REPORT DATE : 10-NOV-1997

SAMPLE SUBMITTED BY : Burns & McDonnell Waste Consultants, Inc.

ADDRESS : 9400 Ward Parkway

: Kansas City, MO 64114

ATTENTION : Sharon Shelton

PROJECT : 94-498-4-004.05 ARMCORFI

Included in this data package are the analytical results for the sample group which you have submitted to Intertek Testing Services for analysis.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative.

If you have any questions regarding this report and its associated materials please call your Project Manager at (972) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

Martin Jeffus General Manager

artin Jeffus

### ANALYTICAL REPORT

DATE RECEIVED : 28-OCT-1997

REPORT NUMBER: D97-13024

REPORT DATE: 14-NOV-1997

Received 11/19/97

SAMPLE SUBMITTED BY : Burns & McDonnell Waste Consultants, Inc.

ADDRESS: 9400 Ward Parkway: Kansas City, MO 6
ATTENTION: Sharon Shelton

64114

PROJECT : 94-498-4-004.05 ARMCORFI

Included in this data package is the revised report for the sample group which you have recently submitted to Intertek Testing Services for analysis. These results are representative of the samples as received by the laboratory. Please refrain from reproducing this report except in its entirety.

If you have any questions regarding this report please call your Project Manager at (972) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

> Martin Jeffus General Manager

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-1
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF1#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.57	15.7 mg/	Kg
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO	V-1997 by CEL V-1997 by GAY			
QC Batch No : ĂC266-20 Method Factor : 1				
	1	0.57	983 mg/	Kg

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-1
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF1#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

EST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
otal Solids		0.01	87.6 %	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-2
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF1#SR1D
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.56	21.0 mg/Kg	
Prepared using EPA 3050A on 4-No Analyzed using EPA 6010B on 4-No QC Batch No : AC266-20	OV-1997 by CEL OV-1997 by GAY			
Method Factor: 1				
	1	0.56	747 mg/Kg	T



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-2
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF1#SR1D
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	88.9 %	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-3
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF2#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	R	ESULTS	FLAC
Cadmium	1	0.66	< 0.	66 mg/Kg	υ
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO QC Batch No : AC266-20 Method Factor : 1	V-1997 by GAY	_			
		0.66	131	mg/Kg	- 1
Lead					

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-3
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF2#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	76.1 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH	·		

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-4
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF3#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULIS	FLAG
Cadmium	1	0.57	5.16 mg/Kg	
Prepared using EPA 3050A on 4-N Analyzed using EPA 6010B on 4-N	OV-1997 by GAY			
QC Batch No : AC266-20 Method Factor : 1		<del></del>		
	1	0.57	208 mg/Kg	



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-4	
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF3#SR1	
DATE SAMPLED:	24-OCT-1997	:		
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI	
SAMPLE MATRIX:	Solid			

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	88.2 %	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-5
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF4#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

1	0.59			
	0.35	10.5	mg/Kg	
7 by CEL 7 by GAY				
1	0.59	602	mg/Kg	
	7 by CEL 7 by GAY 1 7 by CEL	7 by GAY	7 by GAY 1 0.59 602	7 by GAY 1 0.59 602 mg/Kg



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-5
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF4#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	84.7 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH			<del></del>

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-6
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.60	9.82 mg/K	ig .
Prepared using EPA 3050A on 6-NO Analyzed using EPA 6010B on 7-NO	V-1997 by CEL V-1997 by GAY			
QC Batch No : AC266-47 Method Factor : 1				
	1	0.60	647 mg/K	g

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-6
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR1
DATE SAMPLED:	24-OCT-1997	:	,
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

FEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	82.7 %	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-7
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR/MS
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.60	31.4 mg/Kg	
Prepared using EPA 3050A on 6-N Analyzed using EPA 6010B on 7-N	OV-1997 by CEL OV-1997 by GAY			
QC Batch No : AC266-47 Method Factor : 1				
	1	0.60	635 mg/Kg	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-7
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR/MS
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 APMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	83.7 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH			<u> </u>

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-8
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR/MSD
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TOTAL METALS					
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESU	LTS	FLAG
Cadmium	1	0.60	31.2	mg/Kg	
Prepared using EPA 3050A on 6-NC Analyzed using EPA 6010B on 7-NC QC Batch No : AC266-47 Method Factor : 1	0V-1997 by CEL 0V-1997 by GAY				
Lead	1	0.60	584	mg/Kg	
Prepared using EPA 3050A on 6-NC Analyzed using EPA 6010B on 7-NC QC Batch No : AC266-47	0V-1997 by CEL 0V-1997 by GAY				· -

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-8
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF5#SR/MSD
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	82.9 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH	<del> </del>		<u></u>

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-9
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF6#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

	T	1		<u> </u>
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.58	35.8 mg/Kg	
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO	V-1997 by CEL V-1997 by GAY			
QC Batch No : AC266-20 Method Factor : 1	_			
QC Batch No : AC266-20	1	0.58	1940 mg/Kg	



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-9
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF6#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	86.9 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH			

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-10
REPORT DATE:	14-NOV-1997 10:37:15.35	ID MARKS:	10CF7#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
	DIEGITOR TREES.			
Cadmium	1	0.55	6.90 mg/I	Kg
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO	V-1997 by GAY			
QC Batch No : AC266-20 Method Factor : 1				
	1	0.55	389 mg/i	Kg

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-10
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF7#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES	<del>,</del>	· · · · · · · · · · · · · · · · · · ·		
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	90.7 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH	(		

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-11
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF8#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.58	19.2 mg/Kg	
Prepared using EPA 3050A on 4-No Analyzed using EPA 6010B on 4-No	OV-1997 by CEL OV-1997 by GAY			
QC Batch No : AC266-20 Method Factor : 1				
	1	0.58	1420 mg/Kg	



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-11
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF8#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLA
l Solids		0.01	87.0 %	
Analyzed using ASTM D2216 mod. on C Batch No : 274052	5-NOV-1997 by JJH	.L	07.0	

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-12
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF9#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS		FLAG
Cádmium	1	0.55	9.67	mg/Kg	
Frepared using EPA 3050A on 4-No Analyzed using EPA 6010B on 4-No	OV-1997 by GAY				
QC Batch No : AC266-20 Method Factor : 1					
	1	0.55	515	mg/Kg	

DATE RECEIVED: 28-OCT-1997	REPORT NUMBER: D97-13024-12
REPORT DATE: 10-NOV-1997 16:26:09.31	ID MARKS: 10CF9#SR1
DATE SAMPLED: 24-OCT-1997	
PURCHASE ORDER:	PROJECT: 94-498-4-004.05 ARMCORFI
SAMPLE MATRIX: Solid	

DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
	0.01	90.2 %	
			0.01 90.2 %

# ITS Intertek Testing Services Environmental Laboratories

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-13
REPORT DATE:	14-NOV-1997 10:37:15.35	ID MARKS:	10CF10#SR1
DATE SAMPLED:	24-OCT-1997		
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TOTAL METALS				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Cadmium	1	0.59	10.9 mg/Kg	
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO QC Batch No : AC266-20 Method Factor : 1	V-1997 by CEL V-1997 by GAY			
Lead	1	0.59	541 mg/Kg	ı
Prepared using EPA 3050A on 4-NO Analyzed using EPA 6010B on 4-NO QC Batch No : AC266-20 Method Factor : 1	V-1997 by CEL V-1997 by GAY			

Applicable results are reported on dry weight basis.



DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-13
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	10CF10#SR1
DATE SAMPLED:	24-OCT-1997	:	
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

MISCELLANEOUS ANALYSES				
TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT	RESULTS	FLAG
Total Solids		0.01	84.5 %	
Analyzed using ASTM D2216 mod. on QC Batch No : 274052 Method Factor : 1	5-NOV-1997 by JJH			

Applicable results are reported on dry weight basis.

# ITS Intertek Testing Services Environmental Laboratories

DATE RECEIVED:	28-OCT-1997	REPORT NUMBER:	D97-13024-14
REPORT DATE:	10-NOV-1997 16:26:09.31	ID MARKS:	LABQC#
DATE SAMPLED.	24-OCT-1997	:	MBLANK
PURCHASE ORDER:		PROJECT:	94-498-4-004.05 ARMCORFI
SAMPLE MATRIX:	Solid		

TEST REQUESTED	DILUTION FACTOR	DETECTION LIMIT		RESUL	TS	FLAG
Cadmium	1	0.50	<	0.50	mg/Kg	U
Prepared using EPA 3050A on 4-No Analyzed using EPA 6010B on 4-No	OV-1997 by CEL OV-1997 by GAY					
QC Batch No : AC266-20 Method Factor : 1						
	1	0.50	<	0.50	mg/Kg	U

Applicable results are reported on dry weight basis.

## ITS Intertek Testing Services Environmental Laboratories

REPORT DATE: 10-NOV-1997

REPORT NUMBER : D97-13024

SAMPLE SUBMITTED BY: Burns & McDonnell Waste Consultants, Inc.

ATTENTION: Sharon Shelton

#### LABORATORY QUALITY CONTROL REPORT

ANALYTE	Cadmium	Cadmium	Lead	Lead .
BATCH NO.	AC266-20	AC266-47	AC266-20	AC266-47
LCS LOT NO.		AC223-09A,B		AC223-09A,B
PREP METHOD	EPA 3050A	EPA 3050A	EPA 3050A	EPA 3050A
PREPARED BY	CEL	CEL	CEL	CEL
ANALYSIS METHOD	EPA 6010B	EPA 6010B	EPA 6010B	EPA 6010B
ANALYZED BY	GAY	GAY	GAY	GAY
UNITS	mg/Kg	mg/Kg	mg/Kg	mg/Kg
METHOD BLANK	< 0.500	< 0.500	< 0.500	< 0.500
SPIKE LEVEL	50.0	25.0	100	50.0
SPK REC LIMITS	75.0 - 125	75.0 - 125	75.0 - 125	75.0 - 125
SPK RPD LIMITS	25.0	25.0	25.0	25.0
MS RESULT	59.4	26.3	983	532
MS RECOVERY %	91.2	72.7 E	121	6.0 F
MSD RESULT	60.5	25.9	1280	484
MSD RECOVERY %	93.4	71.1 E	418	102 F
MS/MSD RPD %	2.38	2.22	110	178 F
BS RESULT	NA	NA	NA	NA
BS RECOVERY %	NA	NA	NA NA	NA
BSD RESULT	NA	NA .	NA	NA NA
BSD RECOVERY %	NA	NA NA	NA	NA
BS/BSD RPD %	NA	NA	NA	NA NA
DUP RPD LIMITS	25.0	25.0	25.0	25.0
DUPLICATE RPD %	17.8	18.9	12.2	4.39
LCS LEVEL	50.0	50.0	100	100
LCS REC LIMITS	75.0 - 125	75.0 - 125	75.0 - 125	75.0 - 125
LCS RESULT	51.3	49.1	103	96.8
LCS RECOVERY %	103	98.2	103	96.8
SPIKE SAMPLE ID	13024-1	13024-6	13024-1	13024-6
SAMPLE VALUE	13.8	8.12	862	535
DUP SAMPLE ID	13024-1	13024-6	13024-1	13024-6
DUP SAMPLE VAL/1	16.5	9.81	763	559
DUP SAMPLE VAL/2	13.8	8.12	862	535

Not applicable Not applicable due to matrix interference in the QC Sample. Not applicable due to high analyte concentration in the QC sample.

			. <u></u>	R	equest for (	Chemical A	nalysis	and (	Chair	of C	Custo	dy F	leco:	rd									
	Oonnell Waste C	onsultants,	, Inc.	Laborator	у д	75							Doc	cume	nt Ç	ontro	l No	·.:					
400 Ward Fansas City	Parkway Missouri 64114			Address	10.8	9 E. Co	11ins	R.I.	 ما .				1 - 1	. Ref		NI							
	333-8787 Fax	: (816) <b>82</b> 2	2-3463	City/State	/	handson								sode			O. OI						
Attention:	Sharon Sh	Han		Telephone		) 487·5							<del> </del>	Ī		7	_	7	$\overline{}$		7-		
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Sample N	umber	Sampl	e Event	San	pple Depth in feet)		mple ected	ğ	-		Composite		Number of Containers		/ , , , /		/ /	/ /	Ι,	//	R	0 DL	.]
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CF/	SRID		,		1	10/24/97		<del> </del>	X	-		X	1	X						1			
	SRI				4	10/24/97			X			X	1	X				-	<u> </u>	2			
CF2	SRI				2	(0/29/17)	1		X			X	i	X						17			
CF3	SRI				2	10/24/97		<del>                                     </del>	文			X	1	X				<del>                                     </del>	$\vdash$	12			
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Date Logged In 16 1814	<u>17</u>	Received By		Vicion
Coolers Received	<del>,</del>	Cooler Number(s)		
Job Number 13020	<u>{</u>			
Cooler Information:				
Shipping Carrier and bill numb	perNA			
Custody Seals #	Location			
Seals Intact? YES No.	ONA Ship	pping/Receiving Dates Correct	? YES	NO
Cooler Condition ADM	Cooler Temp:	On ICE?	YES	NO
COC in Plastic?	NO COC	C Signed/Dated by ITS?	(FES)	NO
COC Signed by Client?	s no	RAD Screen	POS	NEG
All bottles sealed? YES	TNO	Bottles Intact?	XES	NO .
Labels in good condition? YE	s) NO	Correct containers use	d? (YES)	NO
COC / Sample Information	on:			
Labels agree w/COC?	NO NO	Correct Preservation?	YES	) NO
Sufficient Sample Provided?	S NO	No bubbles in VOA's?	YES	NO ALA
Received in hold time?	is no	Date/Time Sampled?	YES	NO
Short holding parameters flagge	ed / Lab notified	YES NO NA		
Chain Filled out Correctly / Anal	ysis Specified?	YES NO		
Login Journal Review:				
Quote / PP checked for project i	nfo? YES	NO NA		
Correct Customer ID?	ES NO	Correct Contact?	YES	NO
Correct Test Codes Used? Y	ES NO	Correct TAT Specified?	YES	NO

APPENDIX F

Photograph Log of Excavation and Paving Activities



Photo #: 1 Date: 10/22/97
Subject: SWMU 10 EXCAVATION ACTIVITIES

North end of SWMU 10 looking south showing excavation limits.

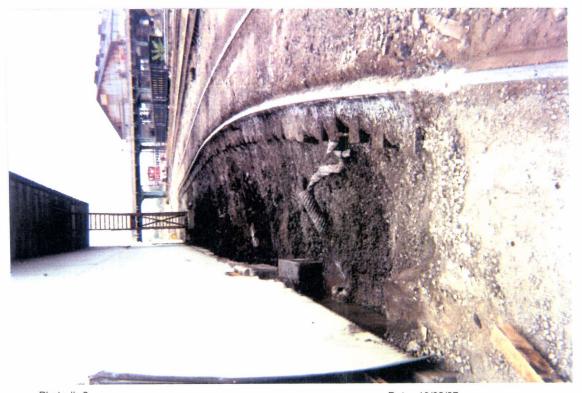


Photo #: 2 Date: 10/22/97
Subject: SWMU 10 EXCAVATION ACTIVITIES

North end of SWMU 10 looking south outside of building showing excavation limit.

### Photograph Log of Excavation and Paving Activities SWMU 10 Excavation and Paving Activities Report

**Armco Kansas City Facility** 



Photo #: 3 Date: 10/21/97
Subject: SWMU 10 EXCAVATION ACTIVITIES
Central portion of SWMU 10 outside looking north showing excavation activities.



Photo #: 4 Date: 10/22/97
Subject: SWMU 10 EXCAVATION ACTIVITIES
South end of SWMU 10 looking north inside building showing excavation activities.
Deepest portion of excavation is along the wall between the two columns.



Photo #: 5 Date: 10/22/97

Subject: SWMU 10 EXCAVATION ACTIVITIES

South end of SWMU 10 looking south inside building showing excavation near railroad and dust suppression activities.



Photo #: 6 Date: 10/21/97 Subject: SWMU 10 EXCAVATION ACTIVITIES

Central portion of SWMU 10 outside looking at west wall, showing stratigraphy.

Note: 0.4 foot brownish-red silt and 0.5 foot gravel above a brown slag and soil layer.



Photo #: 7 Date: 10/21/97
Subject: SWMU 10 EXCAVATION ACTIVITIES
Central portion of SWMU 10 outside looking north showing excavation and dust suppression activities.



Photo #: 8 Date: 10/24/97 Subject: SWMU 10 EXCAVATION ACTIVITIES

North end of SWMU 10 looking south showing sample locations 10CF3 (center) and 10CF2 (top center)



Photo #: 9 Date: 10/31/97
Subject: SWMU 10 EXCAVATION ACTIVITIES
South end of SWMU 10 looking north showing final asphalt limits inside.



Photo #: 10
Subject: SWMU 10 EXCAVATION ACTIVITIES

North end of SWMU 10 looking south showing asphalt limits outside.

**APPENDIX G** 

**Hazardous Waste Manifests - SWMU 10 Excavation** 

#### STATE OF MISSOURI

#### DEPARTMENT OF NATURAL RESOURCES

Please print or type (Form designed for use on elite (12-pitch) typewriter.)

**UNIFORM HAZARDOUS** 

**WASTE MANIFEST** 

4. Generator's Phone ( 81<u>6 ) 242-5855</u>

3. Generator's Name and Mailing Address

5 Transporter 1 Company Name

DIVISION OF ENVIRONMENTAL QUALITY Hazardous Waste Program P.O. Box 176 Jefferson City, Missouri 65102 573-751-3176

ARMCO STEEL

7000 ROBERTS ROAD KANSAS CITY, MO

1. Generator's US EPA ID No.

 $M_1 O_1 D_1 O_1 O_1 O_1 T_1 I_1 I_1 S_1 O_1 Z_1$ 

64125

6 US EPA ID Number

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET. DEPT OF NATURAL RESCURCES 573-634-2436

2. Page .

**HAZARDOUS WASTE MANIFEST** 

A. Missouri Manifest Document Number

0, 0, 1, 5, 1, 0

B. G.S.I. (Gen. Site Address)

SAME

Form Approved OMB No 2050-0039. Expires 9-30-99

is required by State law.

19 PRESPONSE U.S. COAST GUARD CHEM TREC 1-800-424-8802 1-800-424-9300

9012101310

Information in the shaded areas

THIS COPY MUST BE SENT BACK TO THE GENERATOR BY THE DESIGNATED

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ľ						<b>-</b>	porter's Phone	neg ek	· · · · · · · · · · · · · · · · · · ·
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	HERITAGE ENVIRONMENTAL SERVICES, INC.	•				1.5%	RI	20238	
	8525 NE 38TH STREET					H. Facil	ity's Phone	ti e	
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	11. 00 DOT DESCRIPTION (Including Froper Shipping Name, Frazalu Class, ID Northber	and rac	king Group (ii arry))				13. Total	14. Unit	I. Waste No.
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	24 HOUR EMERGENCY PHONE #	JZ	2-1-80 1-1		•	1010	- رو <sup>د</sup>		macial oc
	16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consign	nment are	fully and accurately de	scribed	above by pro	per shippi	ing name and are cl	assified, pac	ked, marked, and labeled,
	and are in all respects in proper condition for transport by highway according to an	pplicable	international and nation	nal gove	rnment regul	ations and	d applicable state re	gulations.	
	If I am a large quantity generator, I certify that I have a program in place to reduct have selected the practicable method of treatment, storage, or disposal currently a								
	quantity generator, I have made a good faith effort to minimize my waste generation								ment, ort, ir and small
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Ţ	20. Designated Facility Owner or Operator: Certification of receipt of hazardous mater	rials cover	red by this manifest exc	ept as	noted in Item	19.			Date
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PA	FORM 8700-22 (REV. 9-96) MDNR-HWG 10 PREV	VIOUS ED	ITIONS ARE OBSOLE	TE /	<del></del>		CAY CO	NTAINS 50%	RECYCLED PAPER WHICH LESS THAN 20% POST
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#### STATE OF MISSOURI

### DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY

Hazardous Waste Program

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE CN A SEPARATE SHEET.

**HAZARDOUS WASTE MANIFEST** 

P.O. Box 176 Jefferson City, Missouri 65102

	573-751-3176	r	4UV	03	193%	PONSE	I .	AST GUARI 424-8802	P	CHEM TR 1-800-424-9		DEPT OF NAT RESCURC 573-634-24	ES
Ple	ase print or type (Form designed for use on elite (12-pitch)	typewriter.)			L		L		Form Apr	proved ON	1B No 20	50-0039. Expires	
	UNIFORM HAZARDOUS	1. Generator's US EF				•	lanifest	2. Pag				the shaded a	
$\ $	WASTE MANIFEST	моро	ρ,	1 1 8	02	Po 12	ument No.	of .	1			State law.	
	3. Generator's Name and Mailing Address ARMCO							A. Miss	ouri Manife	st Docume	nt Numbe	ar	#15 <u>7</u> 1
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П	KANSAS	CITY, MO	641	25				B. G.S.	I. (Gen. Site		(1957 L.)		<u> </u>
П	4. Generator's Phone ( 816) 242-5855	-						1343	SAM	E	V.		
Ш	5. Transporter 1 Company Name		6. US E	PA ID Num	ber			C. MO.	Trans. ID	W-	14%	1.4	* 12
	BEELMAN TRUCK COMPANY		II	LDO	07	8 1	482	50. Trans	sporter's Pf	one (	314)	241-9600	) ( vi.,
Н	7. Transporter 2 Company Name			PA ID Num					Trans. ID			212 3000	5. Yy
П			١.,					F. Trans	porter's Ph	one			
	9. Designated Facility Name and Site Address			EPA ID Nui				G. Stat	e Facility's I	D	<u> </u>		
	HERITAGE ENVIRONMENTAL SEI	RVICES, IN	c.							RR	0238		
	8525 NE 38TH STREET	•						H. Facil	ity's Phone	19.33	\		
	KANSAS CITY, MO 64161		М	D D 9	8 1 5	50	5 5 5	Ь	(81	6)453	-432	1	
	11. US DOT Description (Including Proper Shipping Name, Ha	zard Class, ID Numbe					12. Contain			3.	14.	Ī	2 32
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	16. GENERATOR'S CERTIFICATION: I hereby declare that the												
	and are in all respects in proper condition for transport by h					-	-			-			
П	If I am a large quantity generator, I certify that I have a pro- have selected the practicable method of treatment, storage,	or disposal currently	available	to me whic	h minimizes	the pres	sent and futu	re threat t	to human h	ealth and t			
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#### **HAZARDOUS WASTE MANIFEST**

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 65102
573-751-3176

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

U.S. COAST GUARD

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THIS COPY MUST BE SENT BACK TO THE GENERATOR BY THE DESIGNATION

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se print or type (Form designed for use on elite (12-pitch) typewriter.	)		F	orm Approved ON	/B No 205	0-0039. Expires 9-30
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HERITAGE ENVIRONMENTAL SERVICES,	INC.			RRO2	238	
8525 NE 38TH STREET			H. Facility		*	
KANSAS CITY, MO 64161	<b>1</b> 0 D 9 8 1 5 0 5	5 5 5	] (	816)453-4	321	
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#### **HAZARDOUS WASTE MANIFEST**

DEPARTMENT OF NATURAL RESOURCES OF DIVISION OF ENVIRONMENTAL QUALITY DIVISION Waste Program

Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 65102
573-751-3176

1997 THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS.
INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

EMERGENCY RESPONSE	U.S. COAST GUARD 1-800-424-8802	CHEM TREC 1-800-424-9300	DEPT OF NATURAL RESCURCES 573-634-2436
			373-334-2436

Please print or type (Form designed for use on elite (12-pitch) typewriter.) Form Approved OMB No 2050-0039. Expires 9-30-99 1. Generator's US EPA ID No. Manifest **UNIFORM HAZARDOUS** Information in the shaded areas Document No 8 0 2 9 WASTE MANIFEST is required by State law. 3. Generator's Name and Mailing Address ARMCU STEEL st Document Number ,**0** ] 7000 ROBERTS ROAD KANSAS CITY, MO 64125 B. G.S.I. (Gen. Site Address) SAME 4. Generator's Phone (816 242-5855 5. Transporter 1 Company Name 6. US EPA ID Number 8 1 4 8 2 5 BEELMAN TRUCK COMPANY I L D O O 7 D. Transporter's Phone 7. Transporter 2 Company Name E. MO. Trans. ID F. Transporter's Phone 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID HERITAGE ENVIRONMENTAL SERVICES, INC. RR0238 8525 NE 38TH STREET H. Facility's Phone **T** O D 9 8 1 5 O 5 5 5 5 (816)453-4321 KANSAS CITY, MO 64161 11. US DOT Description (Including Proper Shipping Name, Hazard Class, ID Number and Packing Group (if any), I. Waste No. Number Quantity Wt/Voi RQ, HAZARDOUS WASTE SOLID, N.O.S.,9, NA3077, PG III EPA WASTE CODE 1 (SOIL/ROCK) ERG# 171 001 DT 51 240 P N Ε E b. EPA WASTE CODE E R A EPA WASTE CODE c. STATE EPA WASTE CODE HANDLING CODE (FACILITY USE ONLY) K. J. Additional Descriptions for Materials Listed Above WS# 41330-20 a. 01 b. c. 15. Special Handling Instructions and Additional Information LICENSE# 702700IL 24 HOUR EMERGENCY PHONE # 800-16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and applicable state regulations If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicacie and that I have selected the practicable method of freatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR. if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method available to me that I can afford. Printed/Typed Name Month Dav Year Wear Date 17. Transporter 1 Acknowledgement of Receipt of Materials Day Year Printed/Typed Name Month Jann 9. [ 10 18. Transporter 2 Acknowledgement of Receipt of Materials Date Day Printed/Typed Name Signature Month 19. Discrepancy Indication Space 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. 10 ANYA

PREVIOUS EDITIONS ARE OBSOLETE

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#### STATE OF MISSOURI **EPARTMENT OF NATURAL RESOURCES**

EPA FORM 8700-22 (REV. 9-96) MDNR-HWG 10

### HAZARDOUS WASTE MANIFEST

DIVISION OF ENVIRONMENTAL QUALITY Hazardous Waste Program

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHAMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET

P.O. Box 176 Jefferson City, Missouri 65102 573-751-3176

J.S. COAST GUARD FWERGENCY CHEM TREC 1-800-424-8802

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DEPT OF NATURAL RESOURCES 573-634-2436 NOV 03 1997 1-800-424-9300 Please print or type (Form designed for use on elite (12-pitch) typewrit.  $\epsilon$ ) Form Approved OMB No 2050-0039, Expi **UNIFORM HAZARDOUS** 1. Generator's US EPA ID No Manife 2. Page Information in the shaded 0,2,0,3,4 **WASTE MANIFEST** is required by State law. of 3. Generator's Name and Mailing Address ARMCO STEEL A. Missouri Manifest Document Number 0 1 5 1 20 7000 ROBERTS ROAD KANSAS CITY, MO 64125 B. G.S.I. (Gen. Sita Address) SAME 4. Generator's Phone (816 C. MO. Trans. ID 5. Transporter 1 Company Name 6. US EPA ID Number грроол 8 1 4 8 2 5 BEELMAN TRUCK COMPANY 7. Transporter 2 Company Name E.MO. Trans. ID F. Transporter's Phone 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID RR0238 HERITAGE ENVIRONMENTAL SERVICES, INC. H. Facility's Phone 8525 NE 38TH STREET мор 9 8 1 5 0 5 5 5 5 (816)453-4321 KANSAS CITY, MO 64161 11. US DOT Description (Including Proper Shipping Name, Hazard Class, ID Number and Packing Group (if any)) Unit I. Wast Total Number Quantity Wt/Vol aRO, HAZARDOUS WASTE SOLID, N.O.S., 9, NA307/, PG 111 ERA WAGTE (SOIL/ROCK) ERG# 171 0011DT1509201 STATE () þ. EPA WASTE N STATE **EPA WASTE** STATE EPA WASTE STATE K. HANDLING CODE (FACILITY USE ONL) J. Additional Descriptions for Materials Listed Above aWS# 41330-20 1885 a. b. C. d. 15. Special Handling Instructions and Additional Information LICENSE# T 115 -924 IL 24 HOUR EMERGENCY PHONE # SX 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and applicable state regulations If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator. I have made a good faith effort to minimize my waste generation and select the best waste finanagement method available to me that I can afford. Printed/Typed Name Signature Month Day MURL Mean 1.012.1 Date 17. Transporter 1 Acknowledgement of Receipt of Materials Day Printed/Typed Name Signature Month 101 TICHAKI 18. Transporter 2 Acknowledgement of Receipt of Materials Date Day Year Printed/Typed Name Signature Month 19. Discrepancy Indication Space 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. Day Printed/Typed Name Month 1021 ANUA CONTAINS 50% RECYCLED PAPER WHICH
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### PTATE OF MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY HARMANIA WASTA PROGRAM

**HAZARDOUS WASTE MANIFEST** THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 651 (R) (1) 1 2 1007

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# STATE OF MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY

### **HAZARDOUS WASTE MANIFEST**

Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 6510 NOV 0 3 100 PEMERGENCY

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

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# DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY DIVISION OF ENVIRONMENTAL QUALITY DIVISION OF ENVIRONMENTAL QUALITY DIVISION OF ENVIRONMENTAL QUALITY

Hazardous Waste Program 176 Jefferson City, Missouri 65102 573-751-3176

OCT 3 1 199 HAZARDOUS WASTE MANIFEST THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS.

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ÉMERGENCY	U.S. COAST GUARD	CHEM TREC	DEPT OF NATURAL

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	3. Generator's Name and Mailing Address		A. Miss	ouri Manifest	Documen	t Numbe	ur						
	ARMCO. INC.				00	<u> </u>	[1]U		201317				
Н	ARMCO, INC. 7000 ROBERTS ROAD, KANSAS CI	TY, MO 64125			B. G.S.J. (Gen. Site Address)								
	4. Generator's Phone ( 816 ) 242-5855	0.110.55	M 10 ht		SAME								
	5. Transporter 1 Company Name HERITAGE TRANSPORT, INC.		MAID Number Dir 0, 15, 18, 14, 18, 14	л 1 1 Л		Trans. ID H.							
	7. Transporter 2 Company Name	D. Transporter's Phone (317) 381 - 6848											
		E. Transporter's Phone											
	9. Designated Facility Name and Site Address		PA ID Number		G. State Facility's ID								
	HERITAGE ENVIRONMENTAL SERVI 8525 NE 38TH	RR:	-0238										
	KANSAS CITY, MO 64161	L. A.			134 555 56	ity's Phone							
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	J. Additional Descriptions for Materials Listed Above		K	HANDLING CODE		SE ONLY) FINAL	COMMENTS						
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			LICENSE	* 06-	227	ZMO							
	16. GENERATOR'S CERTIFICATION: I hereby declare that the		fully and accurately describ	ed above by pro	per shippi	ing name and			ked, marked, and labeled,				
	and are in all respects in proper condition for transport by If I am a large quantity generator. I certify that I have a pro-	ogram in place to reduce the volu	me and toxicity of waste ge	enerated to the o	legree I h	ave determin	ed to be e	conomic					
	have selected the practicable method of treatment, storage quantity generator, I have made a good faith effort to minir							e enviror	nment; OR, if I am a small				
	Printed/Typed Name		Signature	1/1/	<i>-</i>				Month Day Year				
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### **HAZARDOUS WASTE MANIFEST**

STATE OF MISSOURI DEPARTMENT OF NATURAL RESOUR( DIVISION OF ENVIRONMENTAL QUALITY	<del>-</del> -	THIS DOC	JMENT MUST	BE USED FOR	ALL MISSOURL	ANIFEST DESTINED SHIPMENTS.			
Hazardous Waste Program P.O. Box 176 Jefferson City, Missouri 6510 573-751-3176	NOV 03 1997	EMERGENCY RESPONSE	U.S. COAST 1-800-42	GOMPLETION C	CHEM TREC 1-800-424-9300	DESTINED SHIPMENTS. E ON A SEPARATE SHEET  DEPT OF NATURAL RESCURCES 573-634-2436			
Please print or type (Form designed for use on elite (12-pitch) typewriter.)  UNIFORM HAZARDOUS  **UNIFORM HAZARDOUS**  **UNIFORM HAZARDOUS**  **UNIFORM HAZARDOUS**  **UNIFORM HAZARDOUS**  **In Comparison of the Comparison of th	US EPA ID No. 0 7 1 1 8 0 2	9 10 2	fanifest ument No.	2. Page 1		2050-0039. Expires 9-30-99 in the shaded areas by State law.			
3. Generator's Name and Mailing Address ARMCO STEEL 7000 ROBERTS ROA KANSAS CITY, MO 4. Generator's Phone (816 242-5855			φ	A. Missouri Manifest Document Number  0 0 1 5 1 0 2 2 0 3 8  B. G.S.L. (Gen. Site Address)  SAME					
5. Transporter 1 Company Name BEELMAN TRUCK COMPANY 7. Transporter 2 Company Name	6. US EPA ID Number  I L D 0 0 7  8. US EPA ID Number	8 1 4	8 2 5	C. MO. Trans. ID D. Transporter's I E. MO. Trans. ID	o <sub>hone</sub> (314) 2	41-9600			
9. Designated Facility Name and Site Address	10. US EPA ID Number	1-1-1-	<u></u>	F. Transporter's P	Phone ID				
HERITAGE ENVIRONMENTAL SERVICES, IN 8525 NE 38TH STREET KANSAS CITY, MO 64161	NC. 1 0 0 9 8 1	5 Q 5		H. Facility's Phon	RR0238 • )453-4321				
aRO, HAZARDOUS WASTE SOLID, N.O.S.,			12. Containers Number	- -	13. 14. Total Unit uantity Wt/Vo				
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15. Special Handling Instructions and Additional Information LICENSE# 7 /02-704 1.  24 HOUR EMERGENCY PHONE # 800 - 8.	27- <del>5<b>2</b>21</del> &								
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this and are in all respects in proper condition for transport by highway according the large quantity generator, I certify that I have a program lace to have selected the practicable method of treatment, storage, or disposal cut quantity generator, I have made a good faith effort to minimize my waste greaters.	consignment are fully and accurang to applicable international and or reduce the volume and toxicity mently available to me which min	of waste gene imizes the pre	rnment regulation rated to the decision and future	ons and applicat gree I have deter threat to human	le state regulations. mined to be econor health and the envir	nically practicable and that I			
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O 18. Transporter 2 Acknowledgement of Receipt of Materials T Printed/Typed Name E R	Signature	<u>)</u>				Date  Month Day Year			
19. Discrepancy Indication Space						:			
C	s materials covered by this mani	feat except as	noted in Item 19	9.		Date			
Printed/Typed Name VERLY D. Coleman  EPA FORM 8700-22 (REV. 9-96) MDNR-HWG 10	PREVIOUS EDITIONS ARE C	BSOLETE	Gem	an	CONTAINS 50	Month Day Year V P Z 9 9 7 % RECYCLED PAPER WHICH OT LESS THAN 20% POST			

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EPA FORM 8700-22 (REV. 9-96) MDNR-HWG 10

#### HAZARDOUS WASTE MANIFEST

EPARTMENT OF NATURAL RESOURCES DIVISION OF ENVIRONMENTAL QUALITY

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

ON OF ENVIRONMENTAL MARKET STATE HAZARDOUS Waste Program
176 Jefferson City, Missouri 65102NOV 0 3 199 FEMERGENCY RESPONSE P.O. Box 176 DEPT OF NATURAL RESCURCES U.S. COAST GUARD 1-800-424-8802 1-800-424-9300 573-534-2436 Please print or type (Form designed for use on elite (12-pitch) typewriter.) Form Approved OMB No 2050-0039. Expires 9-30-99 1. Generator's US EPA ID No. Manifest **UNIFORM HAZARDOUS** 2. Page Information in the shaded areas Document No. fopoo7118029 **WASTE MANIFEST** is required by State law. 3. Generator's Name and Mailing Address ARMOU SIEEL A. Missouri Menife st Document Number 7000 ROBERTS ROAD 0 1 5 KANSAS CITY, MO 64125 B. G.S.I. (Gen. Site Address) 242-5855 SAME 4. Generator's Phone (816 5. Transporter 1 Company Name 6. US EPA ID Number <del>(314)241-9600</del> I L D O O 7 8 1 4 8 2 5 BEELMAN TRUCK COMPANY D. Transporter's Phone 7. Transporter 2 Company Name F MO Trans ID F. Transporter's Phone 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID HERITAGE ENVIRONMENTAL SERVICES, INC. RR0238 8525 NE 38TH STREET H. Facility's Phone **T** O D 9 8 1 5 0 5 5 5 5 (816) 453-4321 KANSAS CITY, MO 64161 11. US DOT Description (Including Proper Shipping Name, Hazard Class, ID Number and Packing Group (if any)) 13. Total Unit I. Waste No. Number Quantity Wt/Vol RQ, HAZARDOUS WASTE SOLID, N.O.S., 9, NA30//, PG 111 EPA WASTE GODE 1 (SOIL/ROCK) ERG# 171 0,0,10,7468,20 N E EPA WASTE CODE STATE EPA WASTE CODE STATE EPA WASTE CODE STATE J. Additional Descriptions for Materials Listed Above K. aWS# 41330-20 a. Ь. C. d. 15. Special Handling Instructions and Additional Information LICENSE# 7 /15-945 IL.
24 HOUR EMERGENCY PHONE # 800-827-532 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and applicable state regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicase and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR. if am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method available to me that I can afford. Printed/Typed Name Day 17. Transporter 1 Acknowledgement of Receipt of Materials Cate Printed/Typed Name Day <u>o</u> 9 GENMAE 18. Transporter 2 Acknowledgement of Receipt of Materials Date Printed/Typed Name Signature Day 19. Discrepancy Indication Space red by this manifest except as noted in Item 19. 20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials co

PREVIOUS EDITIONS

ARE OBSOLETE

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#### STATE OF MISSOURI

EPA FORM 8700-22 (FEV. 9-96) MDNR-HWG 10

#### DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

Hazardous Waste Program Jefferson City, Missouri 65102 P.O. Box 176

HAZARDOUS WASTE MANIFEST

THIS DOCUMENT MUST BE USED FOR ALL MISSOURI-DESTINED SHIPMENTS. INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET. NOV 0 3 19 GARSPONSE DEPT CF NATURAL RESCURCES 573-634-2436 U.S. COAST GUARO 573-751-3176 1-800-424-8802 1-800-424-9300 Please print or type (Form designed for use on elite (12-pitch) typewriter.) Approved OMB No 2050-0039, Expires 9-30-99 2. Page 1. Generator's US EPA ID No. Manifest **UNIFORM HAZARDOUS** Information in the shaded areas Document No. MQDQQ71 **WASTE MANIFEST** 18Q is required by State law. ARMCU STEEL 3. Generator's Name and Mailing Address A. Missouri Manifest Document Number 5, 1, 0 7000 ROBERTS ROAD 0, 0 1, KANSAS CITY, MO B. G.S.I. (Gen, Site Address) 4. Generator's Phone ( 816) 242-5855 SAME . 5. Transporter 1 Company Name 6. US EPA ID Number C. MO. Trans. ID BEELMAN TRUCK COMPANY I L D Q Q 7 8 1 4 8 2 D. Transporter's Phone 7. Transporter 2 Company Name F MO Trans ID F. Transporter's Phone 9. Designated Facility Name and Site Address 10. US EPA ID Number G. State Facility's ID HERITAGE ENVIRONMENTAL SERVICES, INC. RR0238 8525 NE 38TH STREET H. Facility's Phone KANSAS CITY, MO 64161 M, Q, D, 9, 8, 1, 5, Q, 5, 5, 5, 5 (816)453-4321 11. US DOT Description (Including Proper Shipping Name, Hazard Class, ID Number and Packing Group (If any)) Unit Total I. Waste No. Number Quantity a RQ, HAZARDOUS WASTE SOLID, N.O.S., 9, NA3077, PG III EPA WASTE CODE (SOIL/ROCK) ERG# 171 0010747080 STATE N b. EPA WASTE CODE Ν Ε STATE Ř EPA WASTE CODE 0 STATE EPA WASTE CODE STATE HANDLING CODE (FACILITY USE ONLY) K J. Additional Descriptions for Materials Listed Above a. WS# 41330-20 a. b. c. đ. 15. Special Handling Instructions and Additional Information

LICENSE# 7 147-505 IL.

24 HOUR EMERGENCY PHONE # 800-827-552

522 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and applicable state regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method available to me that I can afford Signature Printed/Typed Name Month Day Wear Date 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Signatu Month Day 2 18. Transporter 2 Acknowledgement of Receipt of Materials Date Printed/Typed Name Signature Month Dav 19. Discrepancy Indication Space as noted in Item 19. 20, Designated Facility Owner or Operator: Certification of receipt of hazardous materials coted/Typed Name

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DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 65102
573-751-3176

### **HAZARDOUS WASTE MANIFEST**

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INSTRUCTIONS FOR THE COMPLETION OF THIS FORM ARE ON A SEPARATE SHEET.

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